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Design and Construction of Roof and Wall Trusses.

PART I. TYPES OF WOODEN AND ORDINARY STEEL ROOF TRUSSES.

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A TRUSS is defined as a framework, having members composed of wood, wrought iron, steel, reinforced concrete, or other suitable materials, so arranged as to form a series of triangles and having for its purpose the transference of its loading to one or more supports.

In buildings, trusses are used over large rooms, assembly halls, etc., which have finished ceilings, where the walls are so far apart that simple beams cannot be employed economically, and also over rooms where the ceilings are omitted and the trusses are exposed.

The loads imposed upon trusses, in addition to their own weights, require careful consideration. Ordinary roof trusses usually support the roof covering and all roof framing above the truss, any snow which may be expected to remain on the roof, and the pressure produced by the wind blowing against the roof. In addition to the above loads there may be imposed the weight of a ceiling and an attic floor with any loading which may be placed upon the floor. Occasionally an entire floor is suspended by rods from the roof trusses as in the North German Lloyd Pier Shed at Hoboken, N. J.

Trusses entirely concealed in partitions are used over large rooms which occupy one or more intermediate stories in a building. An example of the use of very heavy concealed trusses is in the La Salle Hotel, Chicago. Each of the steel trusses over the foyer has a span of nearly 77 feet and weighs 221,000 pounds. Other examples are found in the Guaranty Trust Building, New York; Astor Hotel, New York; Bankers' Trust Building, New York; New York Stock Exchange; Union Central Life Insurance Building, Cincinnati, and the National Shawmut Bank, Boston.

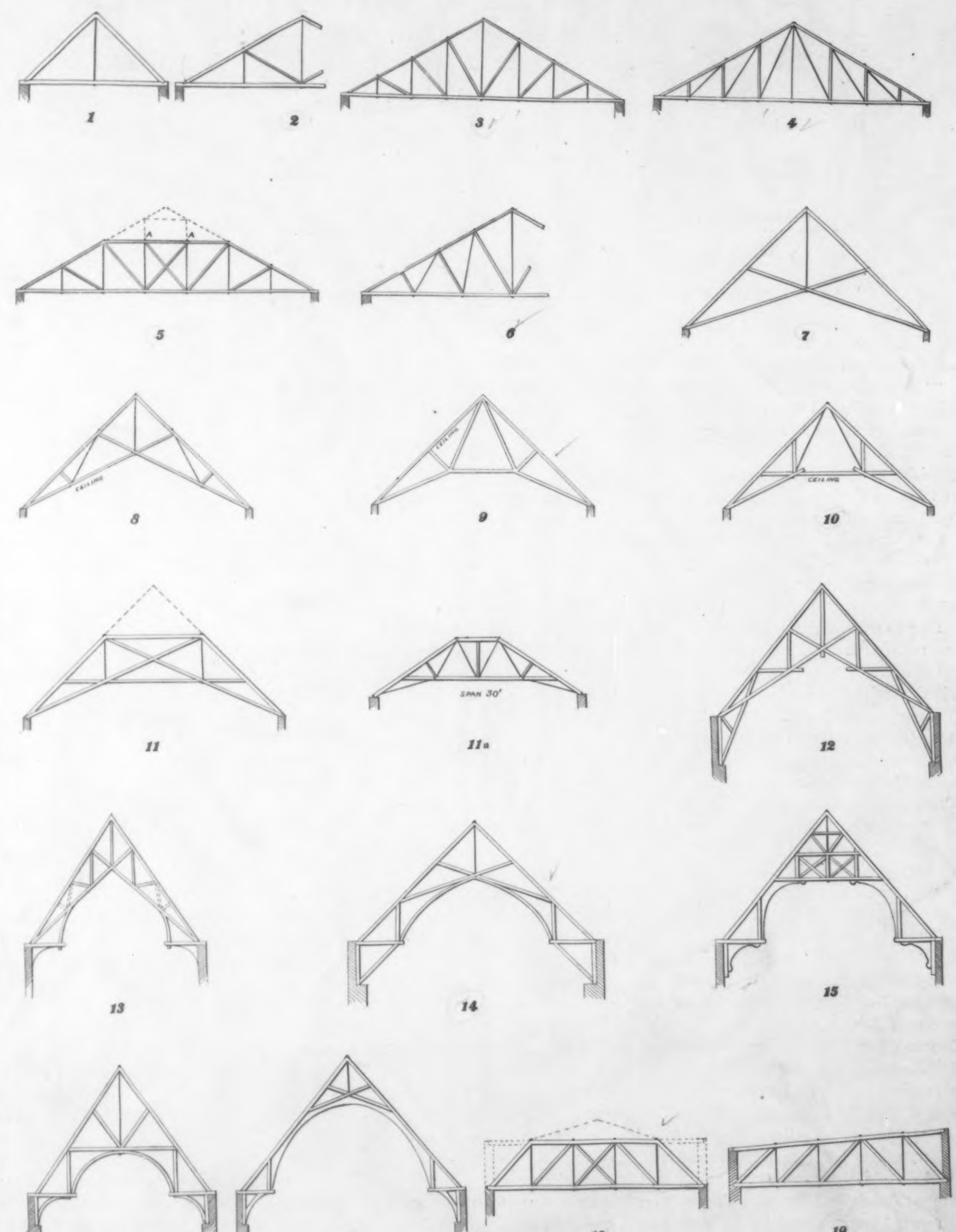
Concealed cantilever trusses are used to support walls and columns. A notable example of the use of trusses in this manner is in the People's Gas Company's Building, Chicago, where sixteen stories of the front of the building are supported by cantilevered trusses with projections of 4½ feet. Cantilever trusses are also used to support balcony floors in theaters, stores, etc., and in grand-stands to support roofs and floors. There are a few examples of cantilevered trusses used in the bottom stories of buildings to carry the side walls where it is not possible to place suitable foundations immediately underneath the walls. In such cases masonry piers are built well within the property lines. Each pier makes one support for a truss which extends to the property line. If the building is narrow, each truss extends from property line to property line; but if the building is wide, the cantilevered trusses extend inward towards the center of the building only to the first row of interior columns.

Types of Wooden Trusses.

The form of a truss is governed by the length of span and the purpose for which it is to be used. Ordinary roof trusses usually have horizontal bottom chords and the top chords of the shape of the roof. Long span trusses and exposed ornamental trusses may have their bottom chords broken instead of straight.

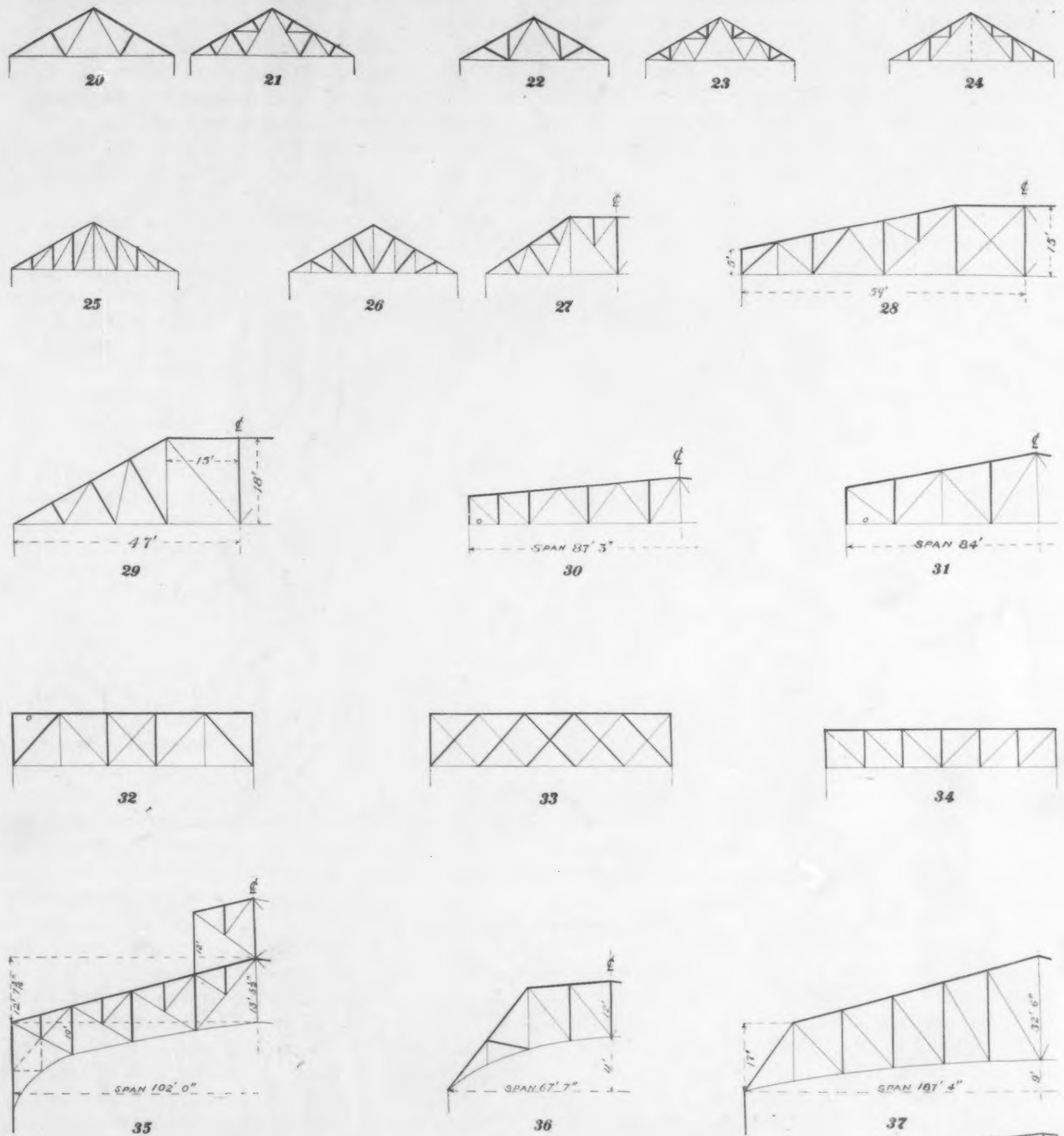
The forms of trusses shown in Figs. 1–18 are suitable for pitched roofs. The form shown in Fig. 1 is used for spans not exceeding 20 feet. The center tie is introduced to support the bottom chord and any loading which may come upon it. Fig. 2 is a combination of three trusses, each having the shape shown in Fig. 1, and is suitable for spans not exceeding 40 feet. These trusses can be built entirely of wood, but usually the vertical members are made of metal rods. For spans between 40 and 80 feet, the forms shown in Figs. 3, 4, 5, and 6 may be used. The truss shown in Fig. 3 has all members of wood excepting the verticals, which are metal rods. When the pitch of the roof or the span is so large that the length of any diagonal member becomes over thirty times its least dimension, then the form shown in Fig. 4 should be used. The type shown in Fig. 4 has all members of wood excepting the diagonals, which are of metal, and is preferable to the form shown in Fig. 3 for long spans. The truss shown in Fig. 5 avoids the use of long compression members in the web and can be used for spans exceeding 80 feet by increasing the number of panels. When this truss is used, provision must be made for lateral bracing between trusses if purlins are not used at the apexes, marked A in the figure. The Belgian truss shown in Fig. 6 has one set of web members normal to the rafters. The light lines in the figure show members made of metal rods.

For steep roofs where the trusses are exposed or when broken ceilings are desired, the forms of trusses shown in Figs. 7–17 are suitable. Fig. 7 shows a simple form of scissors truss which can be used for spans not exceeding 30 feet. If the truss is exposed, the center rod can be boxed to give the appearance of a wooden member. The scissors trusses shown in Figs. 8 and 10 are not intended to be exposed and therefore metal rods are used, as indi-



TYPICAL FORMS FOR WOODEN ROOF TRUSSES

For their use and description see text



TYPICAL FORMS FOR ORDINARY STEEL ROOF TRUSSES

For their use and description see text

cated by light lines. The truss shown in Fig. 9 is constructed entirely of wood when the span is short. For spans of 30 to 40 feet, the tension members should be of metal. These can be boxed to give the appearance of wooden members. The form of truss shown in Fig. 11a is used over the Museum, Hanover College, Hanover, Ind. The light lines indicate the members made of metal rods. Fig. A is a perspective drawing showing the final appearance of the trusses as finished by boxing the metal members. The scissors truss shown in Fig. 12 can be constructed entirely of planks and has the advantage over other forms in having its supports well below the tops of the walls which decreases the outward push. The truss shown in Fig. 13 is really a scissors truss, although it has the appearance of a hammer beam truss. The curved members are inconsistent unless other bracing is used in the truss as indicated by dotted lines.

The hammer beam trusses shown in Figs. 14 and 16 may be used for spans not exceeding about 60 feet. The horizontal member at the top of the wall may extend over the wall as shown in Fig. 16, to make an easy connection for the rafter, but it should bear upon the vertical member underneath and not upon the wall. These trusses are usually built entirely of wood, excepting the single rod in the center, which is boxed. The truss shown in Fig. 15, while having the general appearance of a hammer beam truss, is, in reality, an "A truss," and should be so considered in the determination of stresses. Fig. 17 shows a truss which lies between the hammer beam truss and the "A truss."

The scissors truss, "A truss," and the hammer beam truss require careful designing, as each form produces thrusts against the supporting walls. The wall may be strengthened by pilasters or buttresses to resist the thrusts, or the trusses may be made so heavy and stiff that the thrust is very small.

For flat roofs the Howe truss is suitable. All members excepting the verticals are made of wood. Figs. 18 and 19 show the usual forms. The Howe truss can be used for spans up to 130 feet. The depth of the truss should not be less than one-tenth the span, and the length of the panels should not be greater than the depth of the truss.

Perspective View of Truss in Museum, Hanover College, Hanover, Ind.
Herbert Foltz, Architect

Wooden roof trusses should be spaced from 10 to 15 feet apart. The shorter spacing is usually the more economical.

For concealed trusses in partitions, the Howe truss is the most suitable, as the top and bottom chords can be made a part of the floor framing and the web members arranged to provide for necessary openings in the partitions.

ORDINARY STEEL ROOF TRUSSES.

Any of the forms outlined for construction of wood can be used when rolled steel shapes are employed. For pitched roofs the forms shown in Figs. 20–26 are types in common use. The form shown in Fig. 20 is used for spans less than 40 feet. The fan truss shown in Fig. 22 can be used for spans up to 50 feet, and the forms shown in Figs. 21, 23, 24, 25, and 26 may be used for spans up to 80 or 90 feet. The forms shown in Figs. 27, 28, and 29 can be used for spans up to 200 feet by increasing the number of panels in the central segments. For spans much exceeding 200 feet some form of arch or arch truss should be employed.

For flat roofs, trusses in partitions, cantilevered trusses, and similar structural features, the forms shown in Figs. 30–34 are suitable.

Examples of trusses having broken or curved chords are shown in Figs. 35–40. The curved knee brace in Fig. 35 should be braced as shown by the dotted lines. Fig. 38 shows the method of hanging a balcony to the truss. With the exception of the truss shown in Fig. 36 these trusses are supported by steel columns and are exposed.

Roof trusses of steel are spaced from 20 to 25 feet apart. In school buildings, churches, dwellings, etc., the trusses are usually concealed. In gymnasiums, train sheds, mills, etc., they are exposed. For pitched roofs the forms shown in Figs. 20–23 appear to give the best satisfaction.

In some cases good results are obtained by constructing trusses of steel and then boxing the members with wood or encasing them with concrete. This method is employed when the loads are very heavy and it is desired to have the trusses show in wood or concrete.

The Modern Schoolhouse.

III. WARDROBES, TOILETS, AND SPECIAL ROOMS.

By WALTER H. KILHAM.

ON the question of wardrobes, a difference of opinion among school men is quickly manifested. Questions addressed to a number of teachers on this subject elicited a variety of answers. Eliminating for the moment the old style of placing racks for clothing in the corridors, the main question arises between the method of building a separate closed room for the garments or adopting the more compact plan of arranging hanging space in the thickness of the ventilating stacks and opening directly into the class room. In case separate wardrobe rooms are used, as is very generally the case, and is recommended by most teachers, they should be at least from 4½ to 5 feet wide and ought to run to the outside wall, so as to have a window. Even with this width they are cramped and disagreeable, and facilities for sitting down to put on rubbers, etc., cannot be provided. To make them 6 feet wide or more, as desired by some authorities, would entail too heavy an expense in a large building. They should be separately heated and ventilated, or the foul air from the schoolroom may be drawn out through them. They therefore add roughly 125 square feet of floor, or say 1,700 cubic feet of contents each, which in a large building adds materially to the cost. They are supplied with devices for hanging clothes of which the pole system, with hooks and hatpins, as illustrated in Fig. 7, is one of the best. The heights of the lower poles are for the kindergarten, 30 inches from floor; lower grades 36 to 40 inches; upper grades 44, 48, and 52 inches; distance between poles 8 inches for elementary, 12 inches for high schools. Pins and hooks, 8 to 12 inches on centers for elementary, and 16 to 18 inches for high schools. Each hook has a painted number 1¼ inches high. A copper drip gutter is often placed in the floor under the umbrella clips, or is formed in the floor when terrazzo or composition is used and does not need to be drained. Another rather elaborate arrangement for clothing is the "stall" system shown in Fig. 8. These compartments are made of wire mesh, without doors. A wire shelf at the bottom is provided for rubbers and a wooden shelf at the top for hats. They are invaluable for keeping children's clothing separate, but are too costly for general adoption.

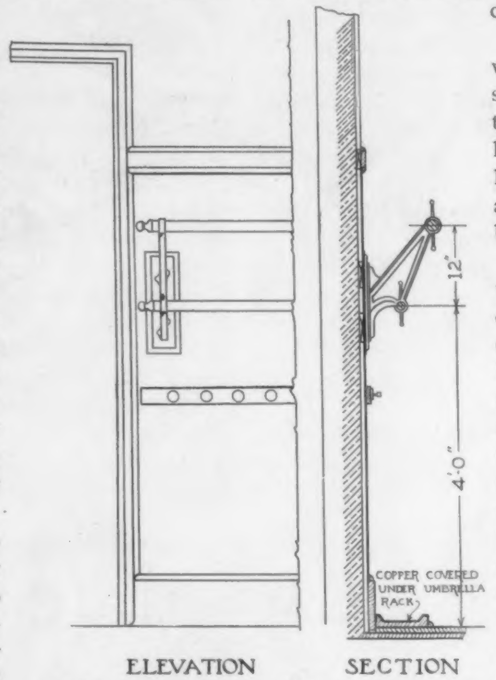


Fig. 7. Details of Hanging Poles for Wardrobes

If the interior walls are treated with burlap, the wardrobe walls should be similarly treated to above the height of the clothes poles, but hard plaster painted in oil is more hygienic and sufficiently durable and, of course, glazed or salt glazed bricks are still better.

Opinions continue to vary as to whether these wardrobes should open directly to the corridor or be entered only from the schoolroom. In either case they offer the possibility of a dangerous trap in case of fire. At the Collingwood School fire, it is said that although the teachers stood at the class room doors, the panic stricken children bolted through the dressing rooms to the stairs, thereby escaping from their control. Had these rooms been accessible only from the class rooms, this danger would have been averted, but a series of *culs-de-sac* would have been built which might have proved even more dangerous.

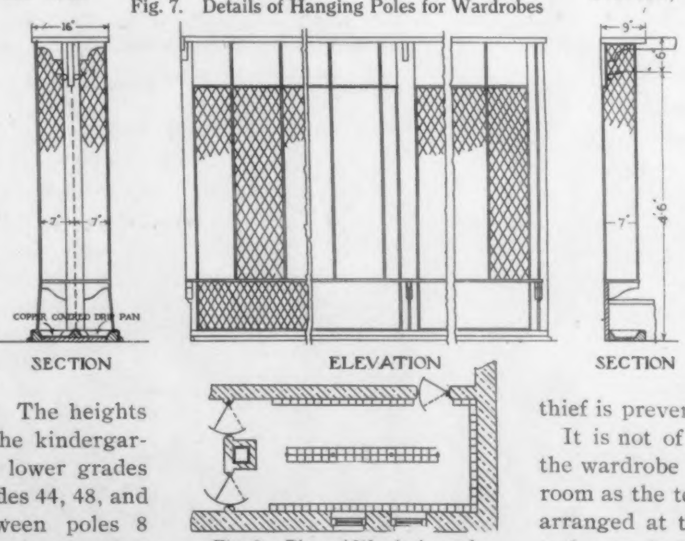


Fig. 8. Plan of Wardrobe and Details of Individual Wire Stalls

Another objection to separate wardrobes is the opportunity they offer for petty pilfering. The doors to the corridor must be kept locked; but many authorities think that these locks should be free on the inside, so that while exit is always possible, entrance for the thief is prevented.

It is not of much importance whether the wardrobe is at the same end of the room as the teacher or not. If it can be arranged at the teacher's end, her control over it is naturally more efficient; but some of the front blackboard space, the most valuable in the room, will be lost by the doors necessary for entrance to the wardrobe.

Most of these troubles are obviated, and the cubic contents (and hence the cost) of the building is reduced by the adoption of the so-called "Chicago" type of wardrobe, which is built in the thickness of the ventilating stack or wall and opens directly into the class room for its

entire length. By this plan no space is lost, the entire wardrobe is constantly under the eye of the teacher, and the children can use their own seats for putting on overshoes. These closets should be well ventilated, and it is perfectly practicable to draw the exhaust air from the class room through them to the outlet duct. The fronts slide up as shown in Fig. 10, and the doors may be utilized for blackboards or "tack" boards, so that no wall space is lost.

These wardrobes have not yet come into general use outside of large cities, but the writer ventures the suggestion that the tax payer's turn is coming in school construction and that the time honored separate wardrobe will not be generally used. The old corridor clothing racks seem to have entirely disappeared, but some cities still place clothing lockers along the corridor walls, a practice which has little to recommend it.

Sanitaries. The toilet rooms in any school building are properly subjects for the most careful attention. They should first of all be well lighted and receive as much sunlight as possible. In grade schools these rooms are generally placed in the basement, but in upper grade and high schools when it is possible they should be located on each floor in order to save long trips to the basement by pupils whose time is increasingly valuable.

The temptation to take any dark corner of the basement for toilet room space is always present because it seems as if the best portions ought to be utilized for manual training or play rooms; but ample light, air, and sunshine are invaluable aids to hygienic conditions in the toilet rooms. The walls are generally left with the masonry exposed and whitened, but when possible they should be lined with white enameled or salt glazed brick. The more attractive the room appears, the better care will be taken of it. Floors are often of granolithic, but are better of asphalt, sloping to the urinal in the boys' room and to a floor drain in the girls'.

Fixtures. Different rules exist for the number of fixtures to be provided. For a mixed or co-educational building the following schedule is required by Massachusetts law, being based upon the assumption of an equal number of pupils of each sex:

	Water Closets.			Urinal Slabs.	
Pupils.	Girls.	Boys.	Urinals.	Feet.	Inches.
50	3	2	2	2	8
100	4	3	4	5	4
200	6	4	6	8	0
300	9	6	8	10	8
400	12	8	10	13	4
500	14	9	12	16	0
600	16	10	14	18	8
700	18	11	16	21	4
800	20	12	18	24	0
900	22	13	20	26	8
1000	24	14	22	29	4

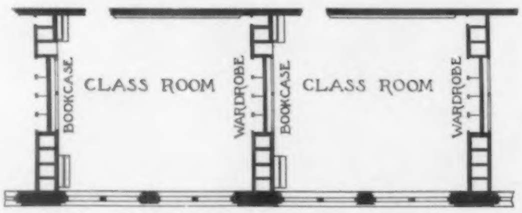


Fig. 9. Plan of Class Rooms Showing Wardrobes in Ventilating Stacks

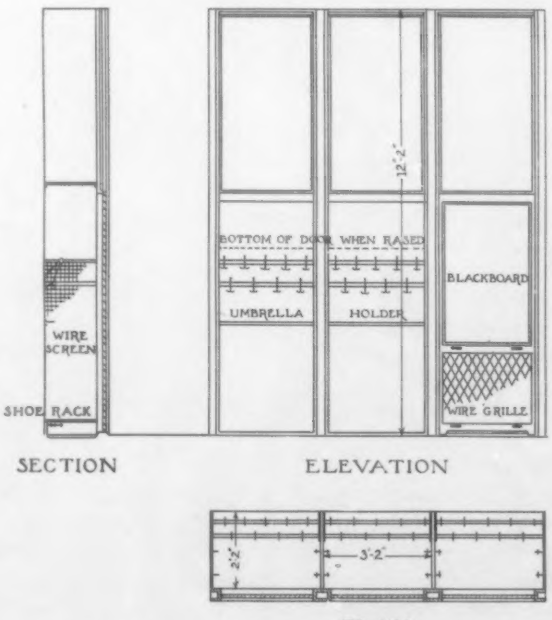


Fig. 10. Details of Class Room Wardrobes in Ventilating Stacks

For buildings having a greater number, or majority fraction of a hundred pupils, or occupied by either sex exclusively, the same ratio respectively is to be observed.

Boston requires water closet accommodation at the rate of 1⅞ per schoolroom (40 pupils), being ⅝ per room for boys and 1¼ for girls and 33 inches of slab urinal per schoolroom. Other authorities give slightly varying rules. Professor Dresslar recommends that the requisite number of seats for girls be obtained by dividing one-half of the total number of pupils (if co-educational) that the building is designed to accommodate by 15, *i.e.*, if the school is built for 600 pupils, there should be 20 seats for the girls. For boys, the number of seats needed can be approximated by dividing by 25, with about 10 urinals. Hence, for the accommodation of 300 boys, 12 seats are generally ample. Mr. Wm. George Bruce, in his useful Manual, recommends one seat for every 15 girls and one urinal and closet for every 25 boys, slightly increasing the number for kindergarten and primary schools.

It will be seen by the above that the tendency is for educators to request a larger number of plumbing fixtures than the boards which are more directly concerned with the expenditure of the public money are apt to recommend. The Boston rule given above, for example, is the result of several years' careful study of the question by officials charged with the duty of obtaining the best practical results in schoolhouse construction possible under the appropriations and eliminating all unnecessary expense. Although this rule cuts down the number of fixtures in some cases about 20 per cent, it has been found to work well and no complaint has come to the attention of the writer. A schoolhouse by all means should be comfortable and convenient; but there is no good reason why the taxpayers' money should be used for providing school children with luxuries of this sort such as few city hotels possess.

The water closet compartments are 2 feet 6 inches wide on centers and 4 feet deep, and behind them a space is arranged for pipes and vents which should be wide enough, say 2 feet, to admit a man to make repairs.

Only substantial and well made fixtures should be considered. Wash down or siphonic action closets are suitable with a raised rear vent of about 11 square inches area, connected to a duct leading to the special exhaust fan provided for the toilet rooms. Short hoppers on heavy iron traps with the same raised local vents are also in common use, although the siphon closets

are superior. These closets are 16½ inches high for the upper classes and 13½ inches for the lower classes. The type of water closet seat that is open in front is preferable to that which forms a complete ring. The tanks may be of plain wood and are best kept behind the partition. The chains should also be here because they can be easily operated by a lever coming through the partition. This prevents the children from playing with the pulls and perhaps injuring the tanks.

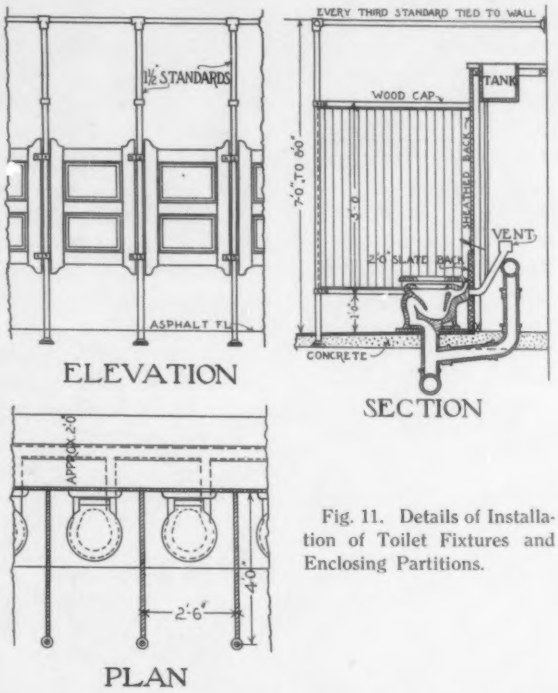


Fig. 11. Details of Installation of Toilet Fixtures and Enclosing Partitions.

The so-called "seat-action" valves which operate by the pressure of the body on the seat are held in favor by some as is also the "before and after" flush, but for general purposes the hand operated flush is simpler and will be found adequate with a little attention from the janitor. Simplicity is a very important factor in connection with any appliance designed for schoolhouse use; and while the question of flushing the fixtures is an important one it is doubtful if any real benefit is obtained by the installation of complicated automatic mechanism. Some authorities hold that children cannot be trusted to use hand pulls, and the automatic flush is indispensable; but large city schools designed by the writer and fitted with hand pulls show good results, perhaps due partially to the fact that the children are trained and instructed to use the fixtures properly.

Automatic flush tanks are, however, in common use for urinals and when properly regulated give good results, and the principle must now be applied also to the water closets in Massachusetts.

The closet enclosures in Boston are generally of ⅞-inch V-grooved hard wood sheathing applied vertically to top and bottom rails of same wood, supported at the ends with iron pipe about 8 feet high to which doors are hung. Iron pipe also ties the compartments together and to the wall. The wood is kept about one foot above the floor and the back partition has a 2-foot slate base. This represents a certain amount of retrenchment in expenditure, as formerly slate was used for the entire partitions. Slate is suitable and cleanly, but is dark and gloomy in color and very much more expensive than wood. The crevices in the sheathing partitions are theoretically abhorred by sanitarians, but it is extremely doubtful if they are actually harmful. Marble is not commonly employed on account of expense, otherwise it is, of course, a desirable material.

The ventilated slab urinal (illustrated in Fig. 12), with or without partitions, is still commonly employed. Partitions should be used when possible and should be so designed as to reduce the contact with the back and bottom slabs to the lowest possible amount so as to avoid corners which are difficult to clean. The slab urinals are flushed automatically from a special tank through a ⅞-inch perforated pipe, to receive which a groove is made in the back slab. They are vented through apertures at the bottom into the space behind. Individual porcelain urinals of the pear shaped type are unsuitable for schools on account of the difficulty met with in cleaning them, but the modern vertical ones are highly satisfactory and are worth their additional cost which is not great, as separating partitions are not necessary with this type.

A black slate sink is generally provided in the basement, sometimes in the toilet room, but perhaps preferably in the play room, with self-closing cocks for hot and cold water. With the increasing respect in which modern school buildings and their fixtures are held by the pupils, it seems as if the more attractive porcelain or enameled wash basins might be substituted for the slate sinks. The drinking fountains are sometimes placed in this sink, but are better kept separate and located in the corridor or play room, outside the toilet room, and, of course, should be of the "bubbling stream" type. Similar drinking fountains should be also installed in the upper corridors, in porcelain or enameled iron sinks. Provision should always be made in the corridors for a faucet for the purpose of drawing water for flower vases, water-color drawings, etc. A slop sink is often installed in a closet off the corridor, supplied with hot and cold water; but when the toilets can be located on each floor instead of the basement, it is much better to locate the slop sinks in them and avoid an extra closet to keep clean.

Windows of toilet rooms should have ribbed glass where exposed to view from outside and wire guards. Doors to toilet should be arranged "in" and "out," and if necessary screens should be constructed inside in co-educational buildings.

Ventilation is effected through the local vents of the water closets and the ventilated urinals into vent-ducts equipped with a special exhaust fan, and fresh air should be supplied to the room from the main system.

All the above applies, of course, to schools in comparatively large places. In rural districts many of the conveniences afforded by an adequate water supply are unobtainable, and the sanitation of buildings of this class may well form the subject of a separate chapter.

Such contrivances as range closets, trough urinals, and "dry" systems of any sort form no part of a modern schoolhouse and will not be considered here. It may sometimes, of course, be impracticable to provide an electrically driven fan for the toilet room ventilation, and in such cases recourse may be had to a flue which may be heated by steam coils or by an independent fire, so as to

avoid the necessity of operating the furnace or boiler in mild weather.

Baths. Baths are introduced to some extent in large buildings, but are hardly an essential portion of the plant. Shower baths are used more particularly in connection with the gymnasiums, but in the poorer districts of cities it is sometimes worth while to provide a bathtub for the immediate cleansing of some particularly untidy pupil and, if desired, this may be provided in connection with the toilet room. A shower is not necessary in this case, but both hot and cold water should be provided.

Principal's and Teachers' Rooms. It is customary to provide the principal of an ordinary grade school with an office of 200 to 250 square feet, in which center the clock and telephone systems of the building. This room should have its own toilet room, containing water closet and bowl, and should also be provided with book storage in the shape either of a book closet or a bookcase. In large schools where a clerk is employed, an outer and larger office should be provided which may contain the master clock and telephone center, with an inner private office for the principal. Where there is no outer office, a place with a seat should be arranged for parents and pupils who are waiting to see the principal. These offices are best arranged on the first floor in a central location, conveniently near the main entrance and so as to command it if possible. Some recommend placing this office on the second floor if the building has three stories. In addition, there should be a room for teachers of about the same size, or a little larger, with separate toilet facilities. Boston allows a room of 300 square feet for 10 teachers. If there are both men and women teachers, separate rooms should be provided. The teachers' room should include an arrangement for warming lunches, either by gas or electricity. A slate shelf, about 20 by 36 inches with slate back which will carry the little gas or electric stove, makes a neat arrangement. In view of the desire of the teachers to give the room a homelike appearance and air of privacy, this should be located in the room so as not to be seen from the corridor. Those who still further wish to pamper the teaching force may provide a cupboard with glazed doors for holding cups, saucers, and utensils.

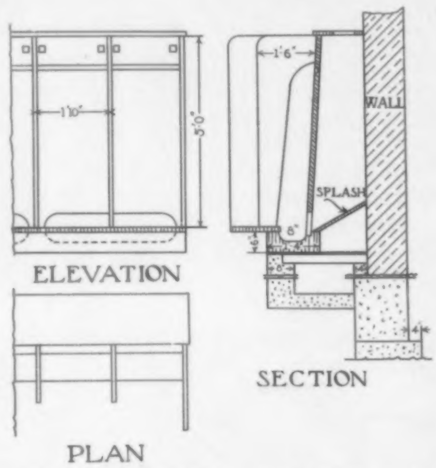


Fig. 12. Details of the Ventilated Slab Urinal

Nurse's Room. The nurse's room should have from 200 to 400 square feet of area, according to the size of the school, with good outside light. The window shades should be set to roll from the window sill upwards. A white tile dado and rounded sanitary coves at the corners give the room a professional air, but are not essential. The floor may be of terrazzo, like the corridors. An electric receptacle should be provided for a hand portable light. In connection with this room, a nurse's closet for supplies is convenient; it may be about 3 by 4 feet in size, with a shelf and half a dozen hooks for clothing.

An enameled iron or porcelain surgical lavatory with hot and cold combination shampoo cock operated both by hand and foot valves is required, and in addition a 5-foot enameled iron bath tub and a water closet are desirable additions, though they are not always supplied. Provision ought to be made for a gas or electric stove, as in the teachers' room, and a secondary clock. The nurse's room is not regarded as an essential part of an ordinary building, but will be found useful for the eye, throat, and nose examinations now customary in most cities.

Storerooms. Many schoolhouses fall short in the matter of storage space. The mere matter of storage of text books not actually in use does not require a great amount of space when the shelving is arranged in library fashion. A room 8 by 10 feet on each floor, which need not necessarily have outside light, will be amply sufficient, but for unpacking cases and storage of bulky articles more space is required. A fair sized room in the basement, somewhere near the boiler room, which should have extra wide doors to the corridor so that a large case can be taken in, will be found a very great convenience.

Views of Wardrobe, Open and Closed, in Thickness of Ventilating Stacks

Leonardo High School, Leonardo, N. J.
Brazer & Robb, Architects

Some Ironwork from Rome and Tuscany.

By JOHN S. SCARFF.

Accompanied by Measured Drawings by the Author.

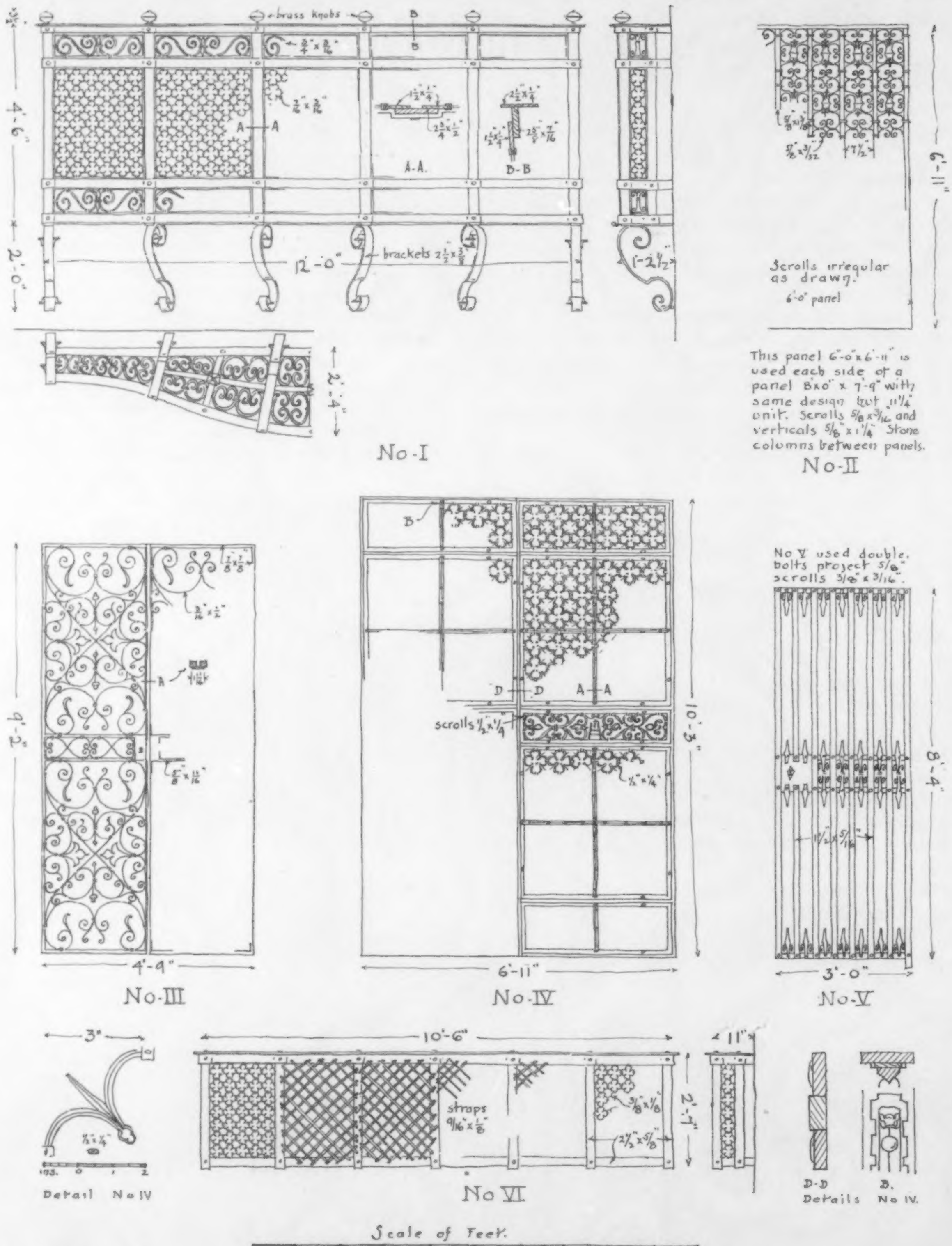
THE advent of machinery at the beginning of the nineteenth century marks a new era in the history of the arts and crafts. Unlike former times when individual effort and skill counted as the most important factors in accomplishment, the emphasis now was placed upon speed and the facility of production. The worker left his workshop for the factory and in so doing lost his individuality, and art became subservient to commercialism. Brought to the realization of the artistic poverty of our lives, we grant to-day the importance of the man and his individual efforts as being equally vital with that of the factory and its production.

The worker in iron has but few constructional details to use as elements of design, and the interest and charm that lies in the earlier work is due to the strict observance of structural requirements and that every hammer stroke reflects personality. The metal was used at a red or white heat and there was no time for copying or measuring a design, except by the eye, and so we get a freshness and spontaneity that the more carefully labored and complex designs do not show.

The medieval smith took great delight in the simplicity of his work. To-day where the architect designs the detail and insists upon accuracy in the reproduction, the result is an uninteresting sameness, lacking in charm. An examination of the accompanying illustrations of old ironwork will show some of the few and simple methods employed in its execution. Two pieces are welded together, or bored and riveted, or joined by short strap-like pieces of iron known as collars. The quality and charm of the design depends upon the degree of fidelity to the structural requirements. Welding is used to suggest brancing growths. Rivets, first used as simple spots, later, more developed and complex, became centers of floriated forms. The collar is used when the design is a variation of the c and s scrolls and in more conventional and geometric forms to give greater richness. In these methods of construction the structural details are an integral part of the design. The accompanying examples of this period of workmanship from Rome and Tuscany show the same difference of quality that exists between all the life and arts of the two greatest centers of the Italian Renaissance. While Rome is more splendid with a magnificent voluptuous beauty, Tuscany attains the finer spirit and higher level.

Of the Tuscan work that shown in No. I, occurring at the second story on the main façade of the Palazzo Publico at Pistoja, for the grace and refinement of its simplicity, cannot be excelled. No. VI illustrates a flanking balcony on the same façade. No. III is an excellent and exceedingly graceful design where heaviness in the section would be disastrous. No. IV shows a variation of the well-known Siena quatrefoil that gives so rich a texture. The close and solid effect of No. V is obtained by wide straps bolted to a heavier framework.

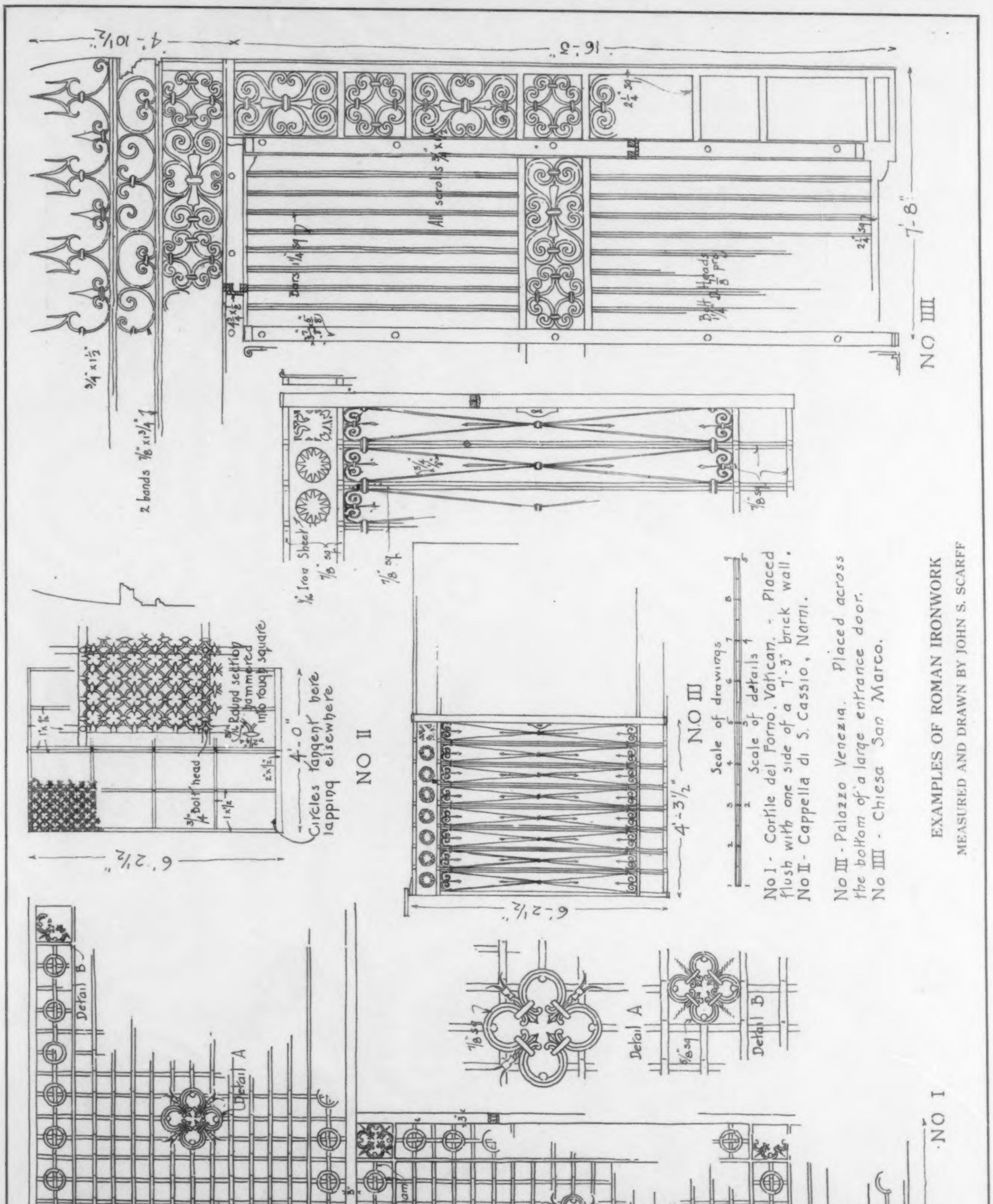
Iron Entrance Grille, Chiesa San Marco, Rome, Italy



No-I Palazzo Comunale, Pistoia. No-II Church of Santa Chira, Assisi.
No-III Palazzo Vechio, Florence. No-IV Palazzo Comunale, Siena.
No-V Convent San Marco, Florence. No-VI Palazzo Comunale, Pistoia

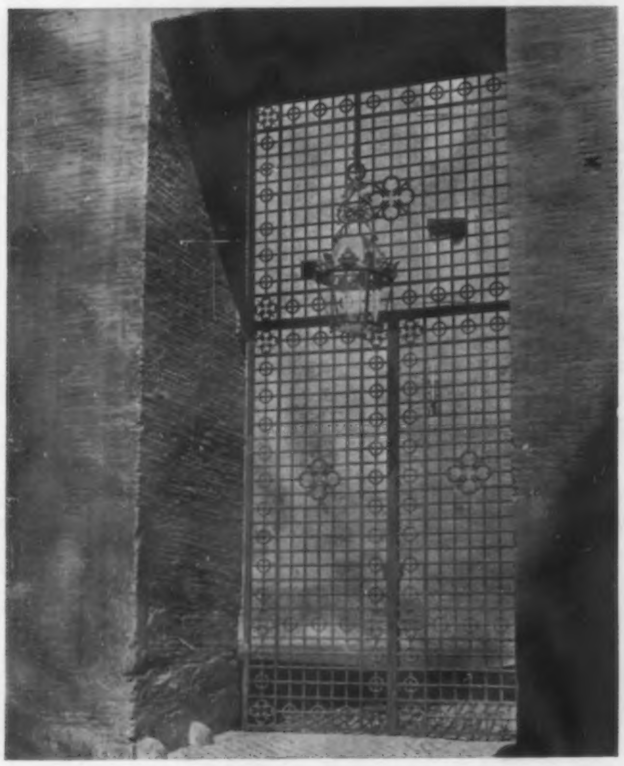
EXAMPLES OF TUSCAN IRONWORK

MEASURED AND DRAWN BY JOHN S. SCARFF

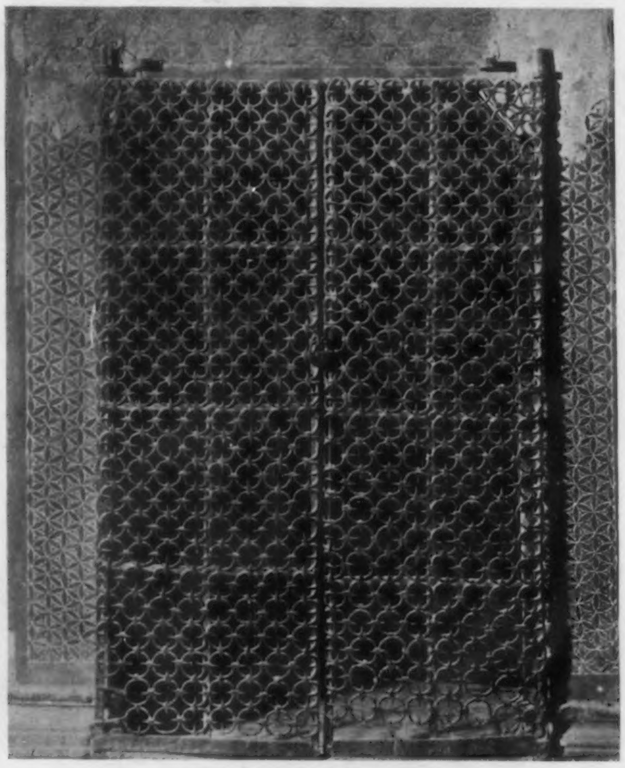


EXAMPLES OF ROMAN IRONWORK
MEASURED AND DRAWN BY JOHN S. SCARFF

Among the Roman examples No. I, between two of the courtyards of the Vatican, is a variation of the common bar design that the disturbed condition of Italy during the fifteenth century developed as a protection. Here in the main field the vertical bars are threaded through the horizontal ones, and in the borders the horizontal through the vertical. No. III, besides the nice proportioning of members, depends for its charm upon its fine contrast of border to open field. No. IV, more magnificent and dignified, has served as inspiration for the entrance grilles of the Boston Public Library, and shows a developed scroll border and plain barred panels where square bars are placed diagonally for greater richness.



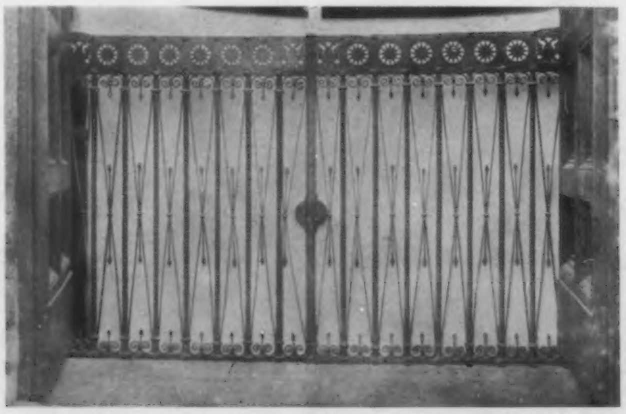
Iron Grille at the Vatican, Rome



Old Iron Gateway in Rome

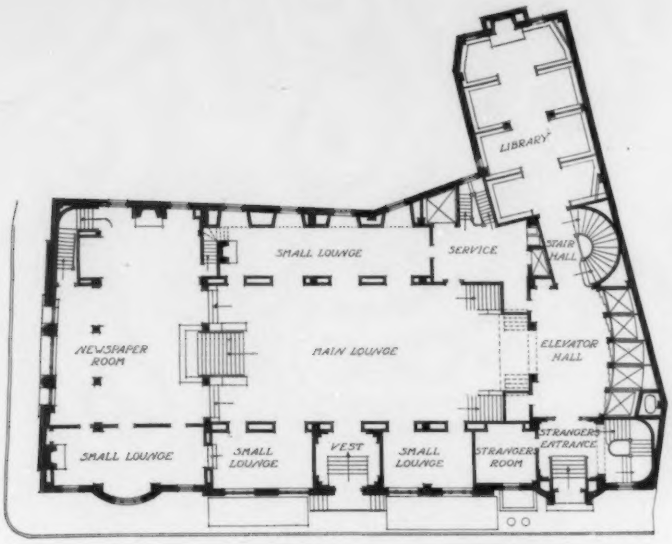
Although iron has a great initial strength, because of the effect of moisture and weather, it is even more perishable than wood. This, combined with the early difficulty of smelting and use of the old material for later work, accounts for the scarcity of examples of an early date in Italy. In Rome, where throughout the Renaissance bronze was the accepted metal; examples are to-day noticeably rare.

Up to the fifteenth century the artisan had been content to perfect his constructional details and was satisfied with simplicity, but with the perfection of methods came the inevitable love of the display of skill and later the imitation of other materials. To-day we may consciously place our craftsman in a position analogous to the early worker desirous of the perfection of his methods within structural limitations and be content with a dignified simplicity, or, armed with the apparatus of a more complete technical knowledge, seek to impress our personality upon structural excellence and gain greater complexity and elaboration.

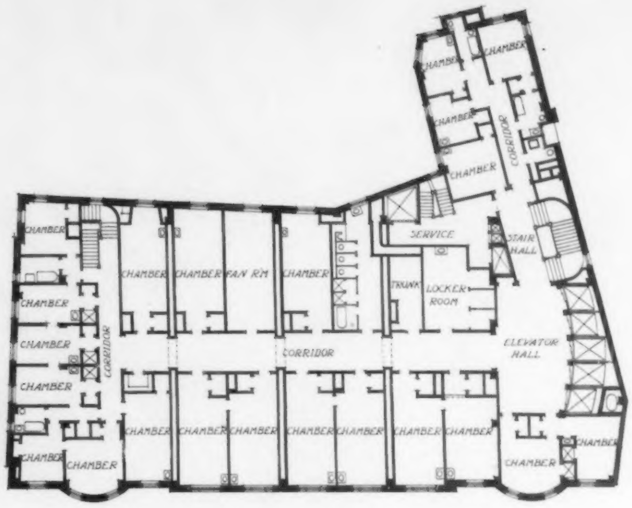


Iron Gate Across Bottom of Large Doorway, Rome, Italy

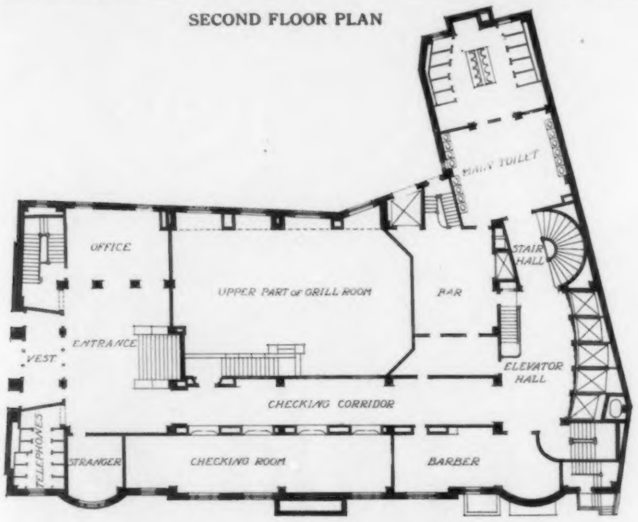
BOSTON CITY CLUB, SOMERSET STREET, BOSTON, MASS.
NEWHALL & BLEVINS, ARCHITECTS



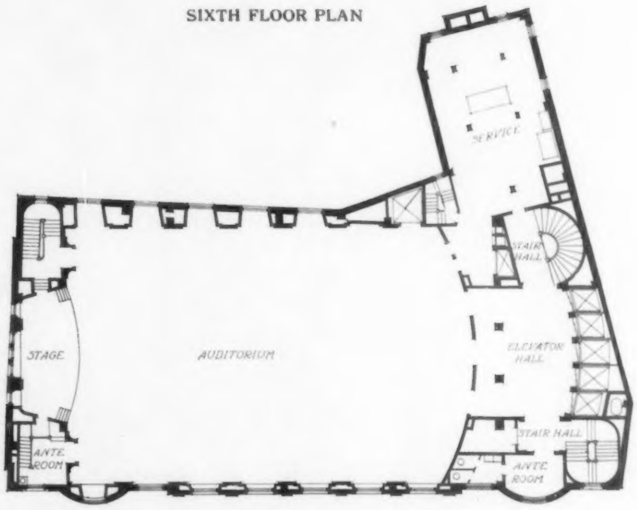
SECOND FLOOR PLAN



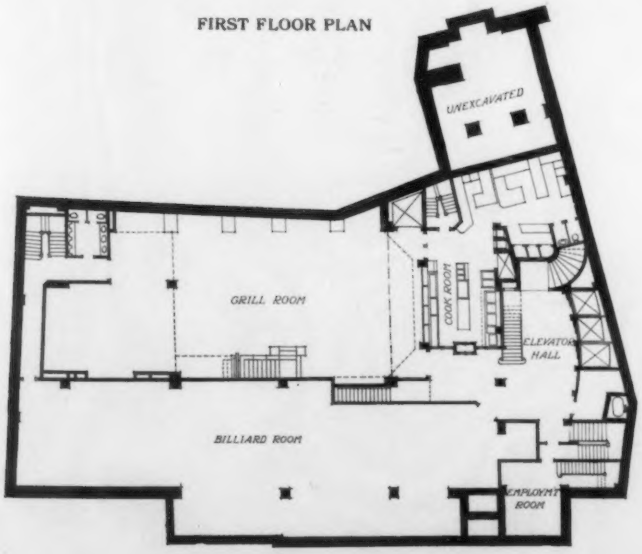
SIXTH FLOOR PLAN



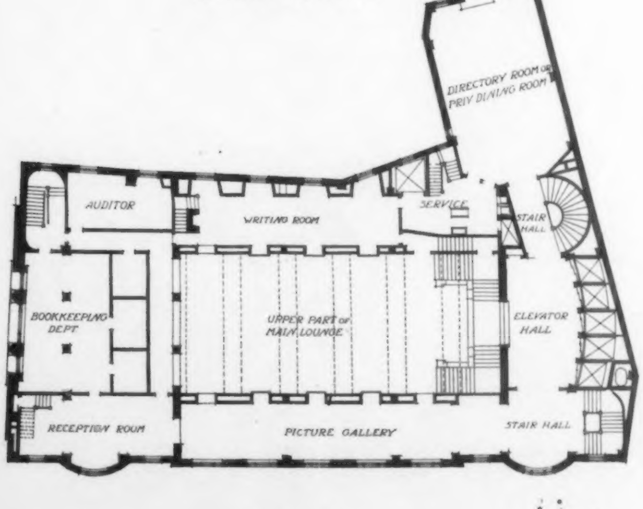
FIRST FLOOR PLAN



FOURTH FLOOR PLAN



BASEMENT FLOOR PLAN

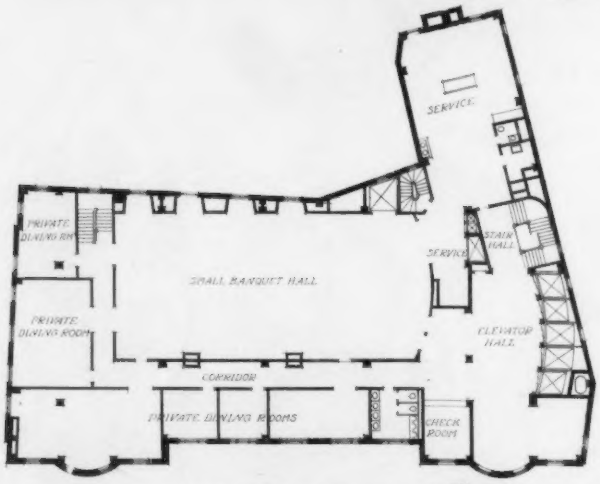


THIRD FLOOR PLAN

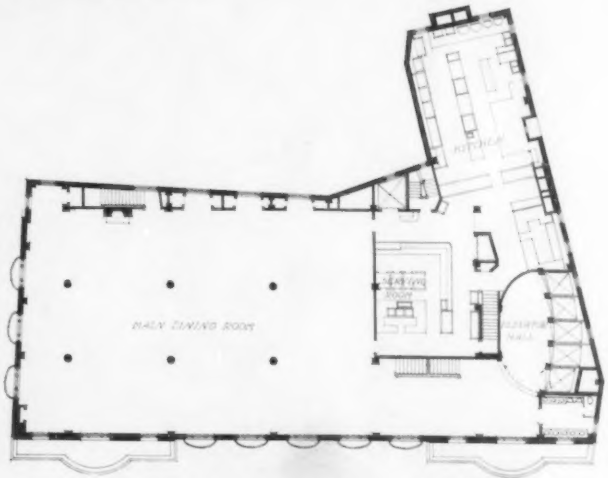
BOSTON CITY CLUB, SOMERSET STREET, BOSTON, MASS.

NEWHALL & BLEVINS, ARCHITECTS

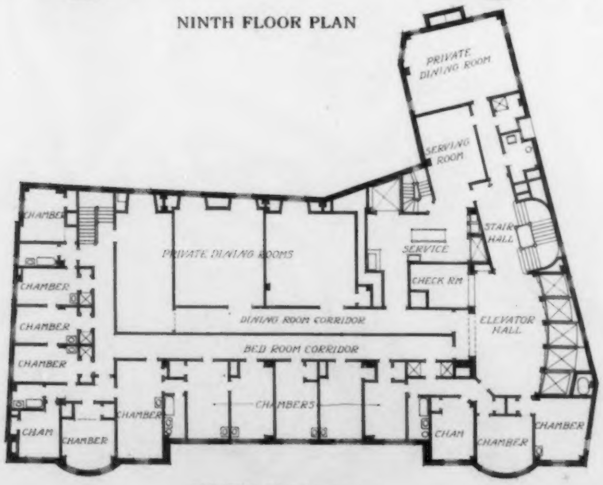
DETAIL OF UPPER STORY, SOMERSET STREET



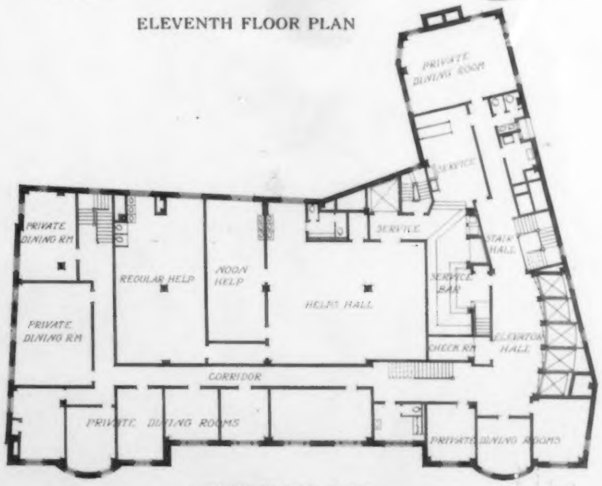
NINTH FLOOR PLAN



ELEVENTH FLOOR PLAN



EIGHTH FLOOR PLAN



TENTH FLOOR PLAN

BOSTON CITY CLUB, SOMERSET STREET, BOSTON, MASS.

NEWHALL & BLEVINS, ARCHITECTS

ENTRANCE TO LOUNGE, ASHBURTON PLACE

MEMBERS' ENTRANCE, SOMERSET STREET

BOSTON CITY CLUB, SOMERSET STREET, BOSTON, MASS.

NEWHALL & BLEVINS, ARCHITECTS

AUDITORIUM

GRILL ROOM

BOSTON CITY CLUB, SOMERSET STREET, BOSTON, MASS.

NEWHALL & BLEVINS, ARCHITECTS

MAIN LOUNGE

MAIN DINING ROOM

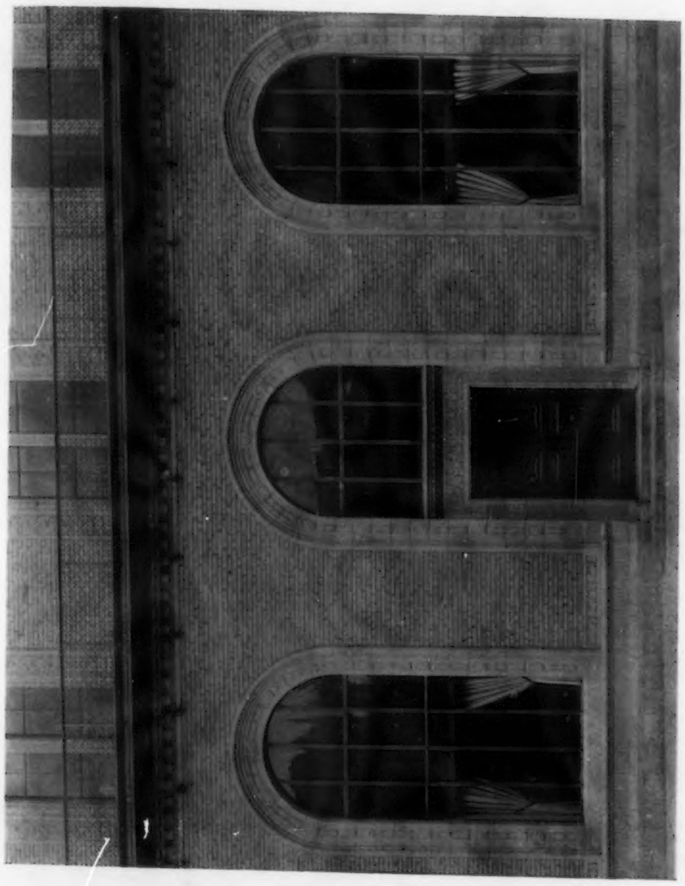
DETAIL OF MAIN LOUNGE

BOSTON CITY CLUB, SOMERSET STREET, BOSTON, MASS.

NEWHALL & BLEVINS, ARCHITECTS

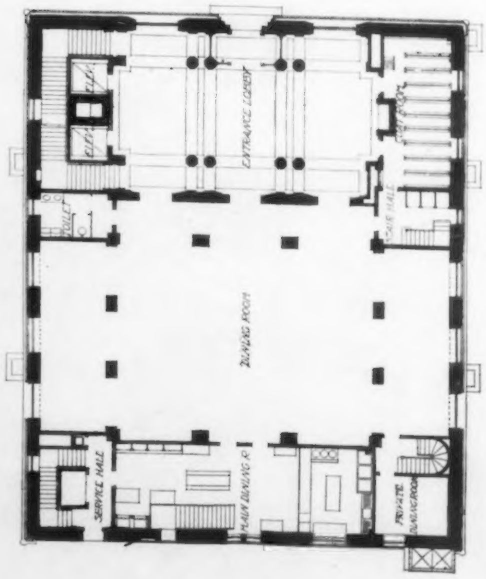
ELKS' CLUB HOUSE, BROOKLYN, N. Y.
H. VAN BUREN MAGONIGLE, A. W. ROSS, ARCHITECTS

DETAIL OF CORNER AT UPPER STORY

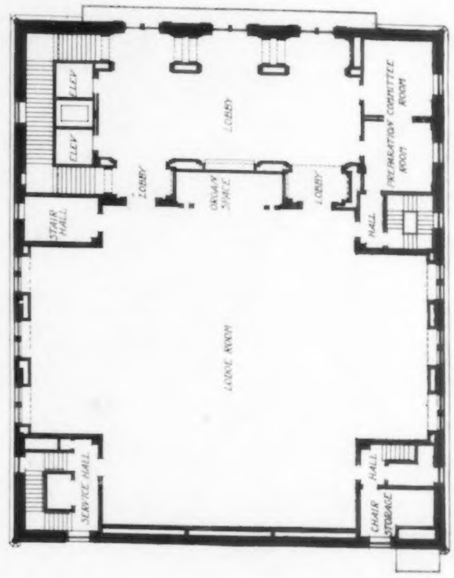


DETAIL OF LOWER STORY

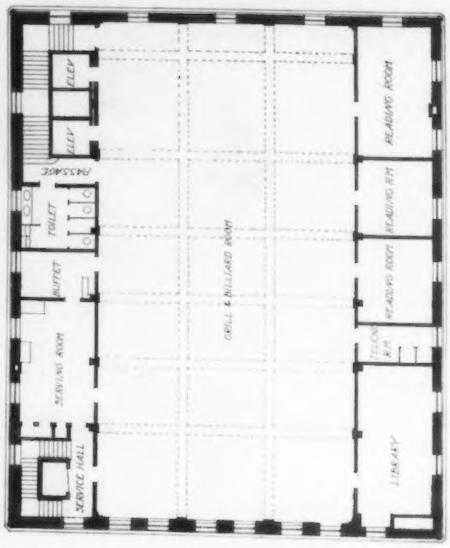
DETAIL OF CORNER AT LOWER STORY



FIRST FLOOR PLAN



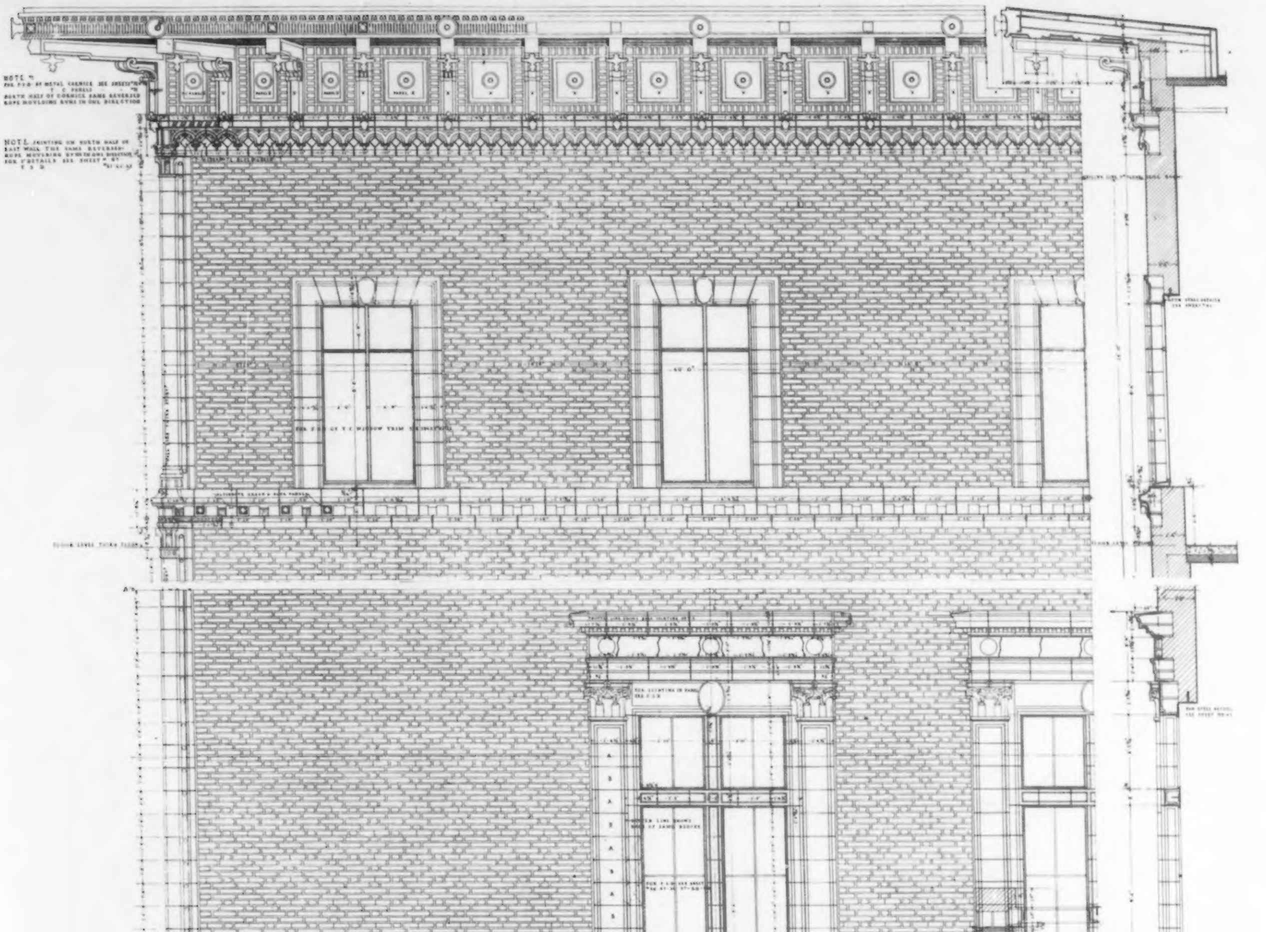
SECOND FLOOR PLAN



THIRD FLOOR PLAN

ELKS' CLUB HOUSE, BROOKLYN, N. Y.

H. VAN BUREN MAGONIGLE, A. W. ROSS, ARCHITECTS

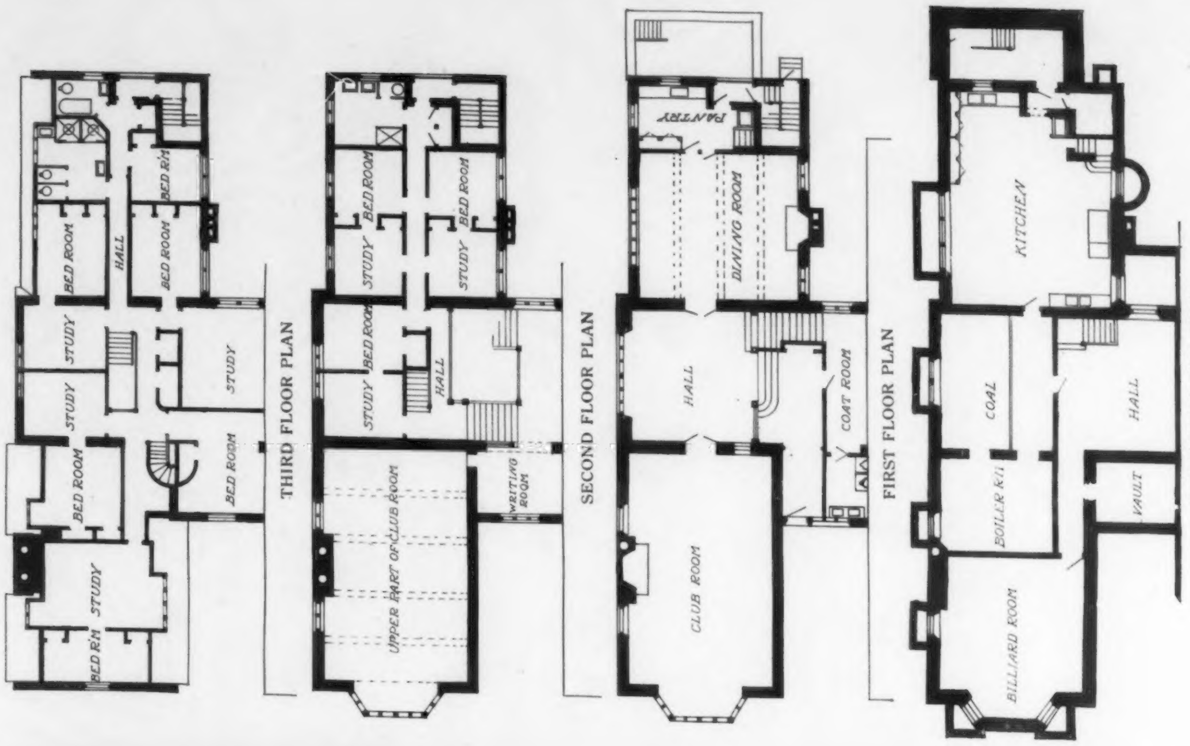


DETAIL OF MAIN FAÇADE

ELKS' CLUB HOUSE, BROOKLYN, N. Y.

H. VAN BUREN MAGONIGLE, A. W. ROSS, ARCHITECTS

PHI GAMMA DELTA FRATERNITY HOUSE, PHILADELPHIA, PA.
MELLOR & MEIGS, ARCHITECTS



THIRD FLOOR PLAN

SECOND FLOOR PLAN

FIRST FLOOR PLAN

BASEMENT FLOOR PLAN

DETAIL OF ENTRANCE

PHI GAMMA DELTA FRATERNITY HOUSE, PHILADELPHIA, PA.

MELLOR & MEIGS, ARCHITECTS

ENTRANCE LOBBY

STAIRWAY

PHI GAMMA DELTA FRATERNITY HOUSE, PHILADELPHIA, PA.

MELLOR & MEIGS, ARCHITECTS

HALL

DINING ROOM

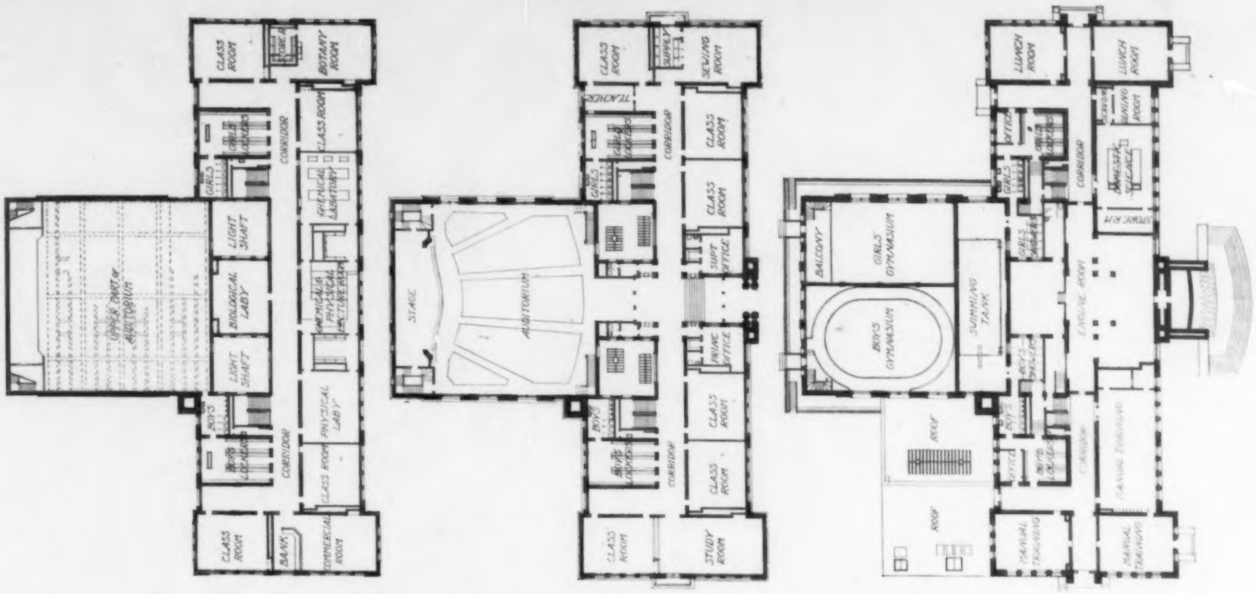
PHI GAMMA DELTA FRATERNITY HOUSE, PHILADELPHIA, PA.

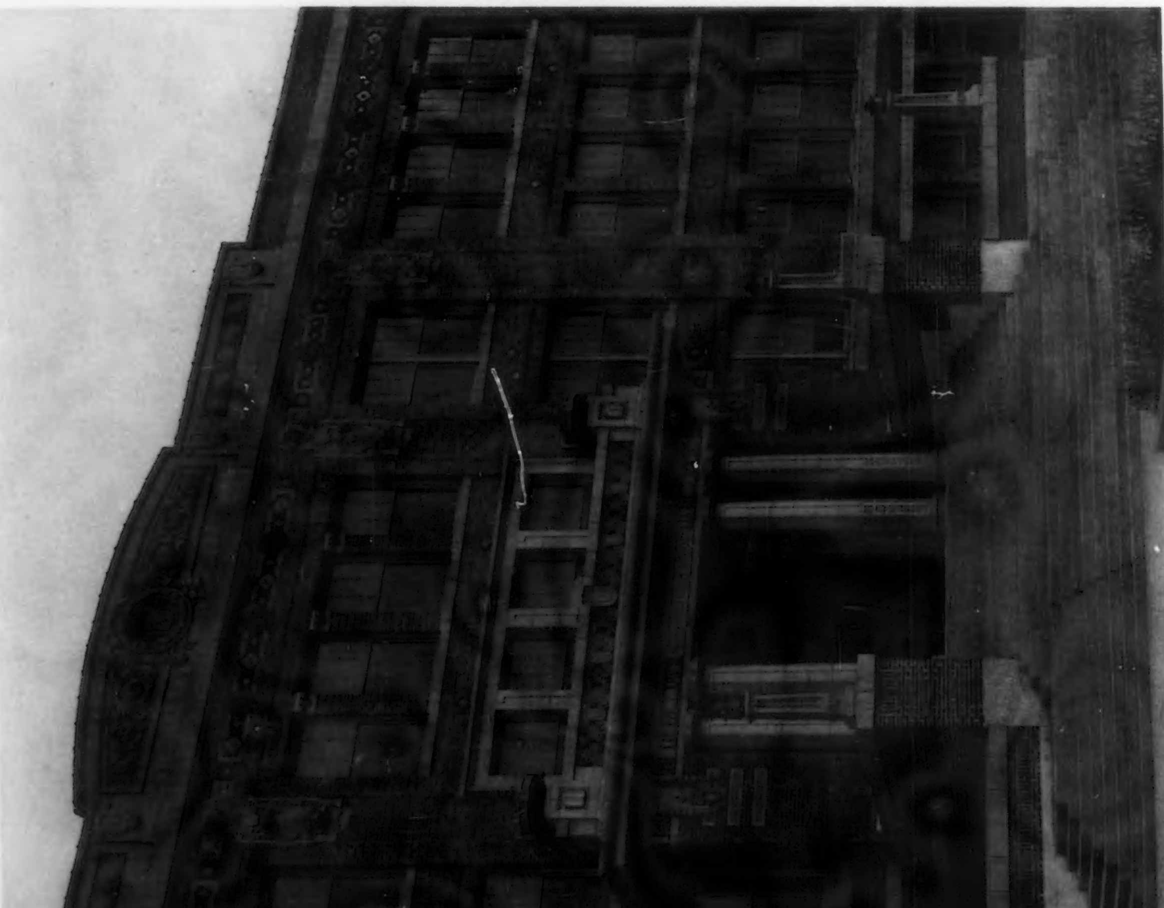
MELLOR & MEIGS, ARCHITECTS

GENERAL VIEW

SIDE VIEW

NORWOOD HIGH SCHOOL, NORWOOD, OHIO
BAUSMITH & DRAINIE, ARCHITECTS





DETAIL OF CENTRAL BAY

NORWOOD HIGH SCHOOL, NORWOOD, OHIO

BAUSMITH & DRAINIE, ARCHITECTS

Practical Suggestions for Planning and Equipment of Hospitals.

By M. E. McCALMONT, R.N.

THERE are so many problems of hospital management intimately connected with problems of planning and arrangement that the progressive architect will insist upon having these things determined before he even attempts the preliminary plans of a hospital.

By way of illustration, there are two distinct methods of distributing linen: the old way of having large linen rooms connected with each ward and a liberal supply kept there regardless of the number of patients; or the more modern method of a large and convenient central linen room where the entire hospital stock is kept, and from which each ward gets its daily allowance on written requisition. The latter method is by far the most economical and satisfactory, but the planning for such a feature of management is obviously different from that required by the first method.

So, too, the serving of food. If a dietitian is to be employed, it should at once be determined how much cooking is to be done in the special diet kitchen. If all the private room trays are to be served from this kitchen, and all the food for the private patients prepared there, obviously the arrangements should be very different than if the food is to be sent in bulk from the main kitchen to the ward diet kitchens and only a few delicacies prepared in the special diet kitchen. In other words, if a large amount of cooking has to be done in the special diet kitchen, it is only fair that this department should be conveniently arranged and placed in close proximity to the storerooms, cold storage, etc. A large hospital at present in course of construction and recently visited has its diet kitchen at so great a distance from the storerooms, and with so little available storage capacity in the room itself, that the poor dietitian who will have to work there can only have the heartfelt sympathy of those who realize how extreme but needless the inconveniences are, and how a little consideration of the ultimate management would have saved a vast amount of human energy throughout the years the hospital will live.

Added to this waste of human energy is the slightly less important waste of equipment. Another new hospital recently visited shows a half dozen expensive steam tables installed but never used because it was found more practical to send the food from the main kitchen on food trucks fitted with hot water containers and which successfully took the place of the steam tables. And so there stands, unutilized, this expensive and unnecessary installation of equipment, while the hospital is crying out for common, everyday needs for which there are no funds.

In this same hospital a large percentage of the plumbing fixtures cannot be used because they were installed without a thought of what the rooms in which they are placed were to be used for. Unenclosed toilets in utility rooms where nurses have to come and go constantly; bath tubs not partitioned off in rooms which have to be used for many purposes — these are but a few of the features which complicate and make difficult the management of a hospital to a degree quite past the comprehension of those who have never worked in one.

A dietitian has many accounts and records to keep, yet seldom has she desk room or office accommodations. If a matron is to have jurisdiction over the laundry, her sewing and mending room should be in close proximity, else there are miles of needless steps each day.

In brief, the personnel of a hospital should be outlined and the duties of employees defined, if one would have a hospital that is practical from a working standpoint.

If a hospital is to include a social service department, adequate preliminary provision should be made for the same. If the Board of Trustees believe in the educational functions of a hospital, and wish to have mothers instructed in the care and feeding of infants, the preparation of milk, etc., it can just as well be determined in advance and a portion of the dispensary be properly planned and equipped for this purpose. If communicable diseases, delirium tremens, etc., are to be admitted, the architect should know it before he begins his plans. Otherwise he may have a beautiful hospital to look at, but it will not be intelligent as far as results are concerned, and the workers and the patients will be the victims.

Some of the Things an Architect Should Know Before Planning a Hospital.

There is a certain field of inquiry which should be covered before an architect begins his hospital plans. Sometimes it is very difficult to ascertain the facts, for seldom can they be obtained from the hospital committees; but as many of the points bear directly upon the future management and the ultimate maintenance of the hospital, and as the maintenance is directly affected by the initial construction, the progressive architect will realize that it is worth his while to make an effort to ascertain the following:

Study of local conditions: Population census for the last three decades, rate of increase.

Topography and situation of the hospital.

Nature of the community, nationalities, religions, industries, wealth, and poverty.

Manufactures, kind, size of plants, number of employees, how cared for medically.

Health statistics (a guide as to the relative proportion of diseases which will have to be cared for).

Bureau of charities: scope of activities, philanthropies, civic movements, district nursing, or social service.

Contemplated organization, management, and personnel of the hospital.

History of the hospital (if already in existence): inception, growth, activities, sources of income, cost of maintenance.

Future construction: blueprints of all existing buildings (showing all underground piping, etc.).

Plans for future expansion (looking ahead at least ten years).

Many an architect who may chance to read the foregoing will doubtless feel an impatience with such detail and possibly fail to see wherein it concerns his work. If so, it is because he has not yet attained the proper viewpoint.

Hospitals are philanthropic institutions, very few of which are self-supporting. Most of them are built and maintained by funds secured through endless days of labor, effort, and anxiety on the part of relatively small groups of individuals. Occasionally we find those which are heavily enough endowed to make the problems of maintenance a matter of small moment. But as a rule the future upkeep is a question of almost constant effort on the part of boards, and ceaseless vigilance and economy on the part of the conscientious superintendent.

If architects could but realize what a part their intelligent or stupid planning means in the future cost of maintenance in the hospitals for which they are responsible, it is certain they would make a greater effort to study hospital needs and functions.

To build a beautiful hospital is a gratifying proposition, but to build a beautiful hospital which is too expensive for the community to maintain and which is therefore abandoned, is a disgraceful fact of which there is more than one instance in this country. Or to build one so extravagant in its administrative features that it carries a burden of constant indebtedness, is almost equally lamentable.

There are two hospitals in the same section of the country, one with a per capita cost of $1.34 per day, the other with a per capita cost of $4.56, a difference of $3.22 per day. Both average about twenty-seven patients per day, making a difference of over $30,000 per year in cost of maintenance. This is extreme, but it is a fact, and while some of it might be explained by the comparative extravagance and economy in the management of the two institutions, yet without doubt most of it is due to the relative inconveniences which necessitate a larger personnel, increased equipment, and expensive administration.

Is it surprising that we beseech our architects to become sufficiently altruistic to either make a study of this many-sided problem or else not attempt the work?

We realize, to be sure, that building committees are also greatly at fault, as is typified by a striking example which may be of value: The citizens of a medium sized town decided to build a hospital. A committee was formed, and it was agreed that they should secure their plans through a competitive contest advertised among architects. The following letter was accordingly sent forth:

Dear Sir: The —— Hospital Association would like to have you submit them preliminary plans for a sixty-two-bed hospital as follows:

	Rooms	Beds	Total Beds
Private rooms	22	1	22
Surgical ward (men's)	1	8	8
Medical ward (men's)	1	8	8
Surgical ward (women's)	1	6	6
Medical ward (women's)	1	6	6
Children's ward	1	4	4
Private ward	4	2	8

To be fireproof. Plans to be arranged so that they can be added to if necessary, to cost about $60,000, your terms and estimate of cost to be submitted with plans.

Yours very truly,

The results may be imagined. As the plans submitted did not meet the requirements of the community and lacked many of the provisions most important to the ultimate management, an outside person conversant with hospital needs was at last consulted and the architects interested were invited to again make plans according to the following specifications:

Dear Sir: Enclosed herewith is a blueprint showing the plot of ground upon which the hospital is to be built — elevations, grades, points of the compass, etc.

It is desired to have a fireproof hospital of about fifty beds, with accommodations for from twenty to twenty-five nurses and from fifteen to eighteen employees. Total cost not to exceed $60,000.

The distribution of rooms, wards, etc., to be approximately as follows:

Male medical ward	about	6	beds
Female medical ward	,,	6	,,
Male surgical ward	,,	6	,,
Female surgical ward	,,	6	,,
Children's ward	,,	6	,,
Maternity ward	,,	4	,,
Nursery	,,	6 or 8	bassinets
Private rooms, maternity	,,	2 or 3	,,
Private rooms (one floor)	,,	8 or 10	,,

A second floor of private rooms, similar to first, to be used for nurses at present, but so arranged as to be easily converted into use for private patients without any great expense, at such time as a nurses' home may be possible.

Each private room to have a clothes closet and stationary washstand with hot and cold water.

Floors used for patients should have the following utility or service rooms: diet kitchen, chart room or nurses' station, toilet, bath, and utensil rooms, treatment rooms, isolation rooms, clothes lockers, linen closet, house maid's closet.

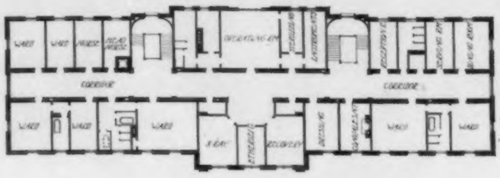
Rest room for special nurses on private floors.

Provisions should be made for offices (and vault), reception rooms, pharmacy, accident rooms or dispensary, observation ward (one or two beds), laboratory, morgue, X-Ray department, nurses' class room.

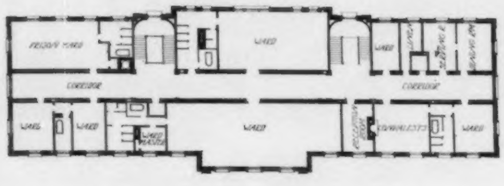
Room specially sound proofed with barred windows, removed from wards, for noisy and delirious patients.

Operating suite: two operating rooms, sterilizing room, rooms for dressings, supplies, and instruments, closet for surgical appliances, wash and locker room for nurses, wash and locker room for doctors, kitchenette for doctors, recovery room.

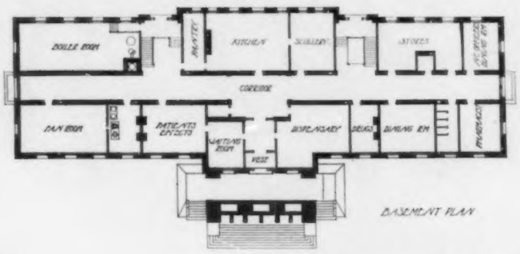
Service building: power plant, laundry (sorting room for soiled linen, distributing room for clean linen, mending or sewing room), kitchen and main diet kitchen, dining and serving rooms for officers, nurses, employees, cold storage, receiving station for all supplies, supply rooms for vegetables, commissaries and household supplies, hospital supplies, linen supplies and blankets, drugs (stock), furniture and equipment not in use, screens, etc., trunk room, small carpenter and repair shop, disinfecting room, incinerating room.



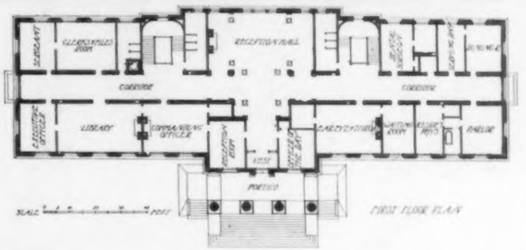
THIRD FLOOR PLAN



SECOND FLOOR PLAN

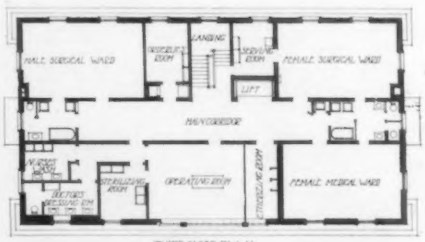


BASEMENT PLAN

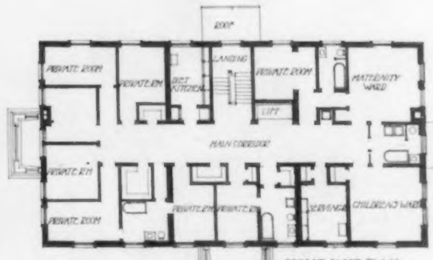


FIRST FLOOR PLAN

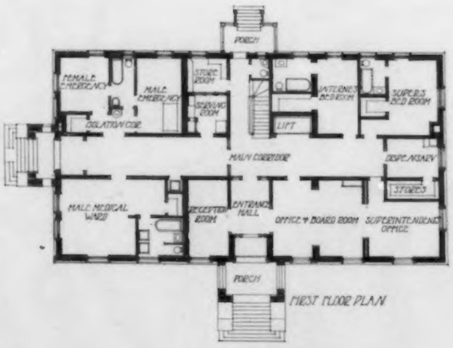
WALTER REED ARMY GENERAL HOSPITAL, WASHINGTON, D. C.
MARSH & PETER, ARCHITECTS



THIRD FLOOR PLAN



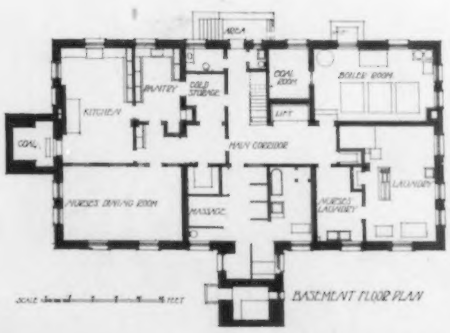
SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOSPITAL AT
WHITE PLAINS, N. Y.

DONN BARBER,
ARCHITECT



BASEMENT FLOOR PLAN

Living quarters for the following personnel: suites for superintendent, housekeeper, and dietitian one bath, operating room nurse and night superintendent one bath, resident physician (two beds, one bath).

Accommodations for (eight) male employees: engineer, fireman, two orderlies, elevator boy, gardener or yard man, general utility man, laundry man.

Accommodations for (eight) female employees: cook, two cooks' assistants, two laundry women, three maids.

Also for eighteen or twenty nurses.

Roofs to be utilized as far as funds will permit.

Future construction and expansion to be tentatively planned for now: additional ward capacity, hydrotherapy department, social service department, expansion of out-patient dispensary (all in basement of hospital), garage and ambulance quarters, contagious building, nurses' home.

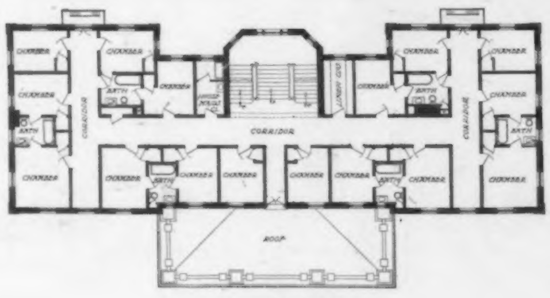
The foregoing specifications are intended to be suggestive rather than arbitrary. If too extensive for the funds available, the architect shall use his best judgment in eliminating or curtailing such features as may seem to him logical, or shall state definitely how reductions may be made, and the financial saving therefrom.

It must be admitted that the foregoing represents "some of the things an architect should know," if we are to have efficient hospitals. In fact, they are points which he should *insist* upon knowing if he is to attempt such a proposition. It would seem as though the difference were worth the insistence.

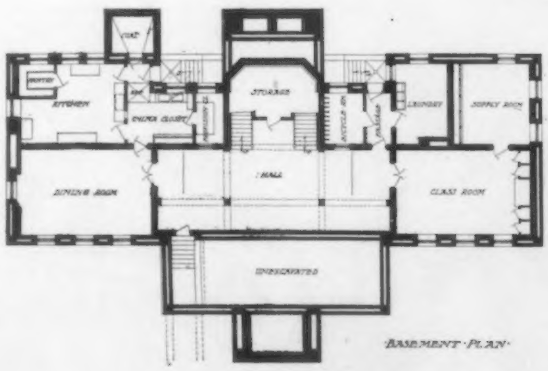
EXTERIOR VIEW, BASEMENT, FIRST, AND SECOND FLOOR PLANS

NURSES' HOME, ST. LUKE'S HOSPITAL, NEW BEDFORD, MASS.

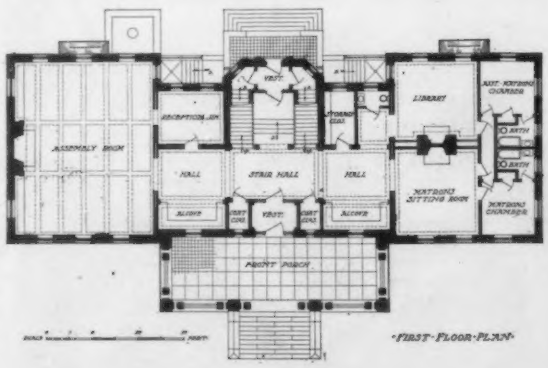
GEORGE HUNT INGRAHAM ARCHITECT



·SECOND·FLOOR·PLAN·



·BASEMENT·PLAN·

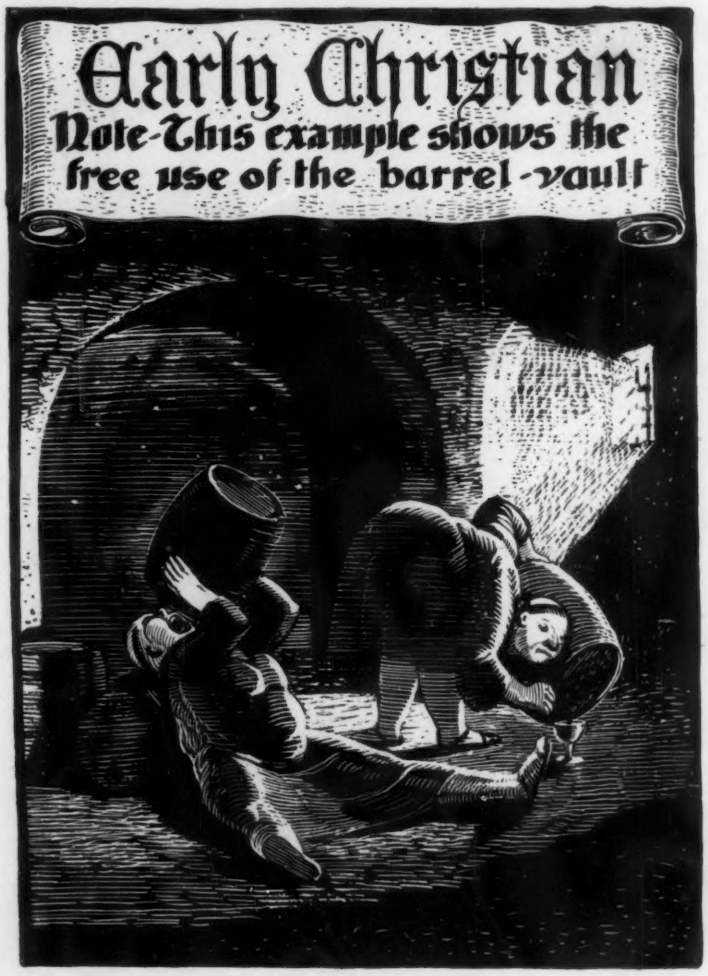


·FIRST·FLOOR·PLAN·

The Nomenclature of the Styles.

A HUMOROUS THEORY ILLUSTRATING IN CARICATURE FAMILIAR SCHOOLS AND PHASES OF ARCHITECTURE.

DRAWINGS BY ROCKWELL KENT. TEXT BY GEORGE S. CHAPPELL.



EARLY CHRISTAIN.

IN the emancipation of the early Goths from classic forms it is to be noted that they attained a robust beauty all their own. Far from lacking what has been termed the Roman "punch," such significant details as the famous apse of St. Eloi de Rière (here represented) prove conclusively that these first artists of the Christian Era knew very well what satisfied their cravings, and went to it forthwith. Façades were generally neglected in favor of interiors, all surfaces of which were treated with lavish care and richness. Certain exterior features, however, are worthy of mention, one among them being the artfully concealed ribs of the vaulting. Damp-proofing being unknown, rudimentary methods were adopted in the removal of fluid contents from basilica basements, a favorite system being shown in the accompanying illustration, which also suggests that the early fathers had a definite knowledge of illumination-processes applied not alone to missals and holy books, but also to problems of human life of a universal nature touching more intimately the home and fireside.

ROCOCO.

THIS fanciful style was a late development of the Renaissance, or Great Awakening, when, wearied by the formulæ of Vignola, the old masters began to sit up and take notice. A general freedom of form began to be displayed and, though old motives were employed, they were given a new twist which resulted in an effect of bad taste and GREAT charm. The example shown in the illustration is peculiarly interesting in that it shows the two main divisions of this style. The row of domes in the foreground, with their somewhat florid ornamentation, belong clearly to the earlier period, which seems almost serious compared to the dainty bit of interior decoration shown in the middle distance. It is a matter of much regret that a too eager pursuit of novelty resulted, as it inevitably must, in a final disintegration of the school, to say nothing of the scholars. This period is reminiscent of the old Adam style, but lacks the vigor and restraint of the parent school.

A Small Office Building.

REMODELED FROM A GROUP OF OLD BRICK HOUSES.

ANDREW HEPBURN, *Architect,* GUY LOWELL, *Associate Architect.*

A SOMEWHAT unpromising row of three old brick houses, party-colored as to façade, distinctly shopworn as to interior — in fact, a very dilapidated group of buildings, but with the possibility of better things suggested by the general mass, brickwork, and grouping of windows — was the problem confronting the architects when it was decided to renovate the buildings at 120 Water street, Boston.

Sketch of Buildings Before Alteration

The original buildings were four low stories in height, with the usual irregularly spaced granite posts on the street floor front, subdividing this story into a conglomeration of stairs and small stores.

Starting with the idea that the exterior suggested a red brick building with white woodwork and small panes of glass, the façade was developed along the lines of least resistance.

The owners were quick to see the possibilities of the building, and they and the tenants took the architect's suggestions with "sweet reasonableness"; and under such unusual conditions the

Small Office Building at 120 Water Street, Boston, Mass. Andrew Hepburn, Architect, Guy Lowell, Associate Architect

road to a solution was well paved.

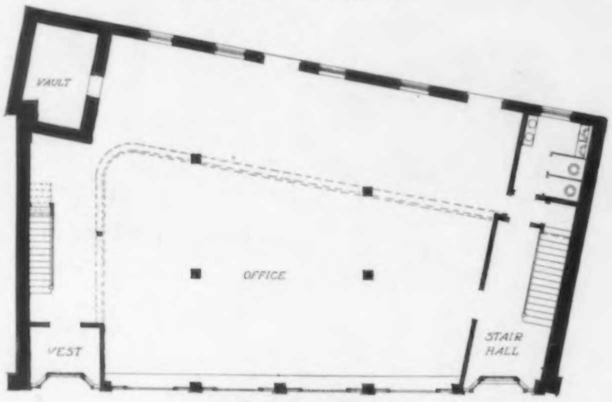
It was decided to have two stories and an attic in the altered building, each story high enough for a mezzanine gallery should such be desirable. In fact, a mezzanine gallery was immediately decided upon for the street floor; but there are at present no such galleries on the second floor, although there is height and light enough for them.

On the exterior the changes above the first story consisted of adding cornice and balustrade, removing the old paint on brick with acid and sand blast, and the use of white paint for everything but the brickwork. The first story façade is of cast iron with wood sashes, which are divided in small panes to accord with the style of the building.

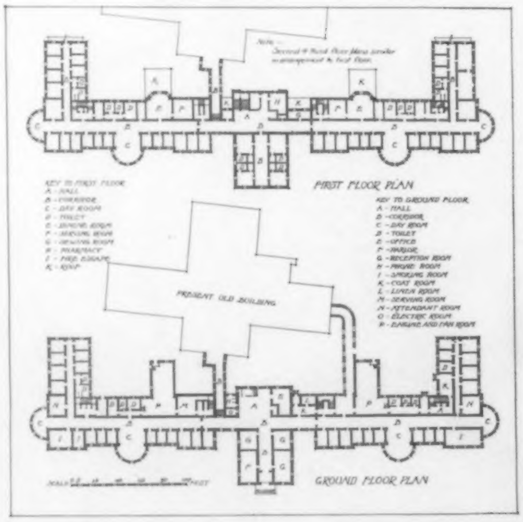
The left hand entrance with vestibule is the main entrance to the general office of the insurance company which occupies the building. This general office is well lighted by the glass front on the street and by the windows on the rear alley. The private office of the president is readily accessible from the public space. The right hand entrance admits to a stairway which leads to the board room and clerk space on the first mezzanine floor and to offices on the second floor. The corridor of the floor connects directly with a corridor in an adjoining building for convenience and is of course fitted with fire-doors. A men's toilet is on the first floor, and a women's on the mezzanine, above which is additional piping for future toilet accommodation.

The interior of the building is as simple and inexpensive as it could be made. All standing finish is of North Carolina pine, stained and varnished, and all floors of rift hard pine oiled. The plaster walls are painted with oil paint.

Interior of First Floor Office



First Floor Plan



Providence Retreat Hospital, Buffalo, N. Y.

Esenwein & Johnson, Architects

THE Providence Retreat Hospital is situated three miles from the business section of the city upon a lot 2,000 by 750 feet, setting back 400 feet from the street line. The exterior is treated in dark red brick trimmed with matt white terra cotta. The roof is of red tile. Upon the interior all flooring is of maple excepting in the bathrooms and water sections, where tile is used. The stairs are of iron with slate treads. Patent plaster has been used throughout, with the exception of the bathrooms, toilets, etc.

The building is equipped with a fan system of heating and ventilation.

As He Is Known, Being Brief Sketches of Contemporary Members of the Architectural Profession.

SAMUEL STANHOPE LABOUISSE

SAMUEL STANHOPE LABOUISSE was born in New Orleans, La., in 1879. After graduating from Tulane University he entered the School of Architecture of Columbia University, receiving his degree with the last class to finish the course under that well beloved teacher, Prof. William R. Ware. Coming back to New York after a year spent in travel and study in Europe, he was employed in the office of Mr. Thomas Nash, and in 1906 returned to his native city and began the practice of architecture as a partner in the firm of DeBuys, Churchill & Labouisse. This partnership has recently been dissolved by mutual consent, and Mr. Labouisse is practising alone.

Although he is a nephew of H. H. Richardson, it would be doing Mr. Labouisse's own energetic personality scant justice to say that he owes his early prominence and success to inherited characteristics. His style has nothing in common with that of Richardson except in so far as it is an expression of a cultivated and sensitive taste. His preference in design is for the early Italian Renaissance and the Colonial; for styles reminiscent of the classic rather than the medieval, and it is in these styles and in some charming modern interpretations of the old architecture of Louisiana that his most successful work has been done. For the picturesque streets of the old city—the "*vieux carre*," as it is called, with its filagree balconies and delightful courtyards—he has an almost parental affection. This has shown itself many times in his championship of the beauties of the old style and in his effective efforts to preserve its charms from wanton injury. Largely through his collaboration with the local Committee on Preservation of Historic Monuments the threatened destruction of the balconies on Canal street and the demolition of some of the buildings of the ancient Barracks has recently been averted. In many other matters touching the public welfare he has found time to give unstinted service, and he has worked untiringly for the cause of better government in his native city. Through his efforts the course in architecture was established in Tulane University and to this department he has freely given his services. He was instrumental in establishing the Louisiana Chapter of the American Institute of Architects and has served his Chapter as president, besides serving on many Institute committees. He is a Fellow of the Institute and also a member of the Association of the Alumni of the American Academy in Rome. —*N. C. C.*

WILLIAM B. FAVILLE

WILLIAM B. FAVILLE is of American lineage and might be fifteen or fifty, so uncertain is the age of the enthusiast. He gained his first schooling in his chosen profession at the Massachusetts Institute of Technology and his first practical experience in the offices of McKim, Mead & White; still one could hardly claim him as a true exponent of either influence. An intense love of color for its own sake, coupled with an innate sense of the decorative, quite naturally has led him into a freer exercise of architectural possibilities than the fixed lines of "classicism" would permit. With one having less of the truly architectural inspiration this strong bent towards that which is purely subsidiary in the art would lead to an excess of the ingenious in detail and in planning; but in Mr. Faville's work it is quite absent. Although, perhaps, not always successful in linking a very well considered and formed plan to an equally well studied and reserved elevation, it can be truly said that the source of the failure to do so can be found in the contradictory elements of the art, as we know it, rather than in the attitude of the architect himself towards the same. Given that freedom of choice in selection, something due every architect, Mr. Faville rarely misses a right solution of a building problem and giving it a telling architectural expression. The new Masonic Temple, the Flood residence, the Oakland Free Library, the California and Union Savings Banks, and the Columbia Theatre—all of San Francisco—each in its way bespeak the same architectural point of view—the love of color and the purely decorative are ever there; but, these purely casual things in this art are never thought sufficient if they merely cover an insufficient architectural body, so to speak. He never enters into the trivialities of personal conceits; his originality is displayed in choosing from well known traditional examples and in using these in a trite and agreeable manner. This in itself is a valuable quality in an architect, as it places him in easy communication with not only his patrons, but also with workers who, without losing their identity, have to be entrusted with details in execution. Mr. Faville is a member of the firm of Bliss & Faville, San Francisco, Cal., who are responsible for the main features of the plan of the Panama-Pacific Exposition buildings. The development of the great enclosing walls was especially delegated to them, as was the Palace of Education and the Palace of Varied Industries. —*A. F. M.*

ROBERT CLOSSON SPENCER, JR.

PRECISION and breadth stand out as conspicuous characteristics in the work of Robert Closson Spencer, Jr. He believes that the joy of creative work is legitimate, that it is not only the right of the architect, but that it also is essential for the greatest good to the client that the architect should experience that pleasure which comes from doing original work. And the noteworthy fact is that he never forgets his convictions nor recedes from his position. His work is uniformly in harmony with his theories.

His precision he inherits from his father and from his grandfather, who was the author of the Spencerian System of Penmanship. His breadth and his democracy come, I suspect, from his mother. At least, it is safe to assume that most creative democrats — for that is what he is in architecture — have mothers noted for quiet force and unassuming strength and sweetness.

He was born in Milwaukee, April 13, 1864. After the usual common and high school training he entered the University of Wisconsin and graduated as a mechanical engineer in 1886. He commenced his study of architecture at the Massachusetts Institute of Technology, after which he studied and worked in the offices of Wheelwright & Haven, and with Shepley, Rutan & Coolidge. He crowned his eastern experience by winning the Rotch Traveling Scholarship in 1891 and for two years he studied in Europe as the eighth Rotch scholar. The colored drawing of the ceiling of the central dome of the Villa Madonna, Rome, which was published in the Rotch Scholarship Envois, has shown his ability to work and to show every detail without the loss of breadth. Many acquire breadth by elimination, but Robert Spencer never does. He includes everything, but always keeps all parts in proper relation. This drawing is one of many made during his study of Italian interiors from the standpoint of decoration and color.

In recognition of his work the American Institute of Architects conferred the honor of fellowship upon him in 1909. His interests as well as his attainments are shown by his membership and activity in the University and City clubs of Chicago.

He began independent practice in Chicago in 1895 and in 1905 he took into partnership Mr. Horace S. Powers.

Robert Spencer was one of the first to put the popular periodical article on domestic architecture upon a basis dignified, valuable, and suggestive. His series of articles on Farm Houses in the *Ladies' Home Journal* in 1900 were a distinct contribution to society and to architecture.

In addition to the value which his clients receive in his work, and the pleasure which he and his associates get from doing it, he never fails to interest and satisfy his brother architects, whether it be the drawing they look at or the finished construction. — *D. H. P.*

CHARLES D. MAGINNIS

CHARLES D. MAGINNIS was born in Londonderry, Ireland, in 1867, and educated at the Cusack's Academy in Dublin, and later won the Queen's Prize in Mathematics at an examination held at South Kensington, London. He declined appointment to the English Civil Service when seventeen years old and came to Boston as a lad in 1886. He began his architectural experiences when he entered the office of W. P. Wentworth, a man who in his day was associated with much of the most serious and the best work of Boston. About 1888 he entered the office of the late E. M. Wheelwright, who was then serving as city architect. Mr. Maginnis rapidly made a brilliant reputation for himself as a draftsman, his pen and ink renderings being particularly fresh and original in their style. He remained with Mr. Wheelwright until 1896, when with Timothy Walsh and Matthew Sullivan he formed the firm of Maginnis, Walsh & Sullivan, later continuing the business with Mr. Walsh alone. He has been a member of the Municipal Art Commission of the City of Boston since 1908 and of the Massachusetts State Art Commission since 1911; a Fellow of the American Institute of Architects; member of the Boston Society of Architects, Boston Architectural Club; very prominent in the Arts and Crafts Society, and a frequent contributor to the architectural periodicals, besides having published a very clear and much sought for work on the subject of "Pen Drawing." He has won his chief fame in the designing of Roman Catholic churches, a task to which he has brought a degree of enthusiasm and thorough appreciation of the possibilities of material, the value of wall surfaces, and the efficient massing of ornament, light, and shade, that are his not merely by temperament, but also because of careful training. He is essentially an artist and is able to embody in his work those delicate shades of meaning which count for so much in an architect's life, but which so few of us are able to make real. In all of his work, however humble the building or however exalted the problem, he never loses sight of the essential character of the edifice. He has used color a great deal—indeed, all his work has a quality of color even though carried out in monotone, and monotony or mere adherence to types has never been his limitation. He loves his problems and works over them, idealizes them, dreams of them, until they assume visible, blooming shape. And though his architecture is so thoroughly picturesque, and though the element of color plays so large a part therein, he follows perfectly legitimate academic tradition. He is a product of the American School of Architecture, plus all the idealism which made the early Italian Renaissance so charming, and his churches in every instance are truly monuments of architecture. Scattered as they are throughout the country, they are works of careful, conscientious art and a joy to all who behold them. — *C. H. B.*

PLATE DESCRIPTION.

THE BOSTON CITY CLUB. PLATES 31–36. The Boston City Club is located on Somerset street and Ashburton place, a retired though central section of Boston. It has been designed to house a club having a very large membership with varied civic and business interests. The chief centers of activity are located in the upper and lower stories of the building, between which the floors are devoted to small private dining rooms and chambers.

The building has three entrances: one devoted to the use of members on Somerset street, one for visitors at the upper end of the Ashburton place façade, and a central entrance which leads to the main lounge and is reserved for use upon formal occasions. From the members' entrance a wide staircase of easy ascent leads directly to the main lounge and to the right is an ample corridor, giving access to the check rooms, barber shop, and the main bank of elevators at the rear.

The main lounge extends up two stories in the center of the building and is surrounded by a mezzanine floor containing alcoves on the lounge floor level and writing rooms and picture gallery on the second level. The grill room is two floors below the level of the lounge. Its ceiling is supported by heavy oak beams stained a dark gray. The upper portion of the walls is pierced by leaded casement windows which open on the main corridors of the floor above. The walls are of cement plaster treated in a manner to represent stone.

On the third floor above the members' entrance is located the main banquet room and lecture hall, occupying a space of 100 by 60 feet, two stories in height, and accommodating five hundred diners. On the top floor the main dining room is located, also occupying a space of two stories. It is 80 by 60 feet and accommodates four hundred and fifty diners at a time.

The service and kitchen arrangements are particularly ample and are located in an extension of the main building which extends the full height of the sixteen stories. In this section service and freight elevators are located, also special service rooms on each floor directly over one another, with dumb waiter service to the main kitchen. The latter is on a level with the main dining room; above it on a mezzanine floor is a compartment nearly the same size, in which all vegetables are prepared and the baking done. An ice manufacturing plant is located on the roof above the kitchen. There are twenty-two small private dining rooms and sixty sleeping chambers, averaging in size 12 by 24 feet.

The total cost of the building was $540,000, or 31 cents per cubic foot. This includes besides the cost of construction, elevators, heating and plumbing, refrigerating system and refrigerators, vacuum cleaning system, pneumatic order system, bar, check room and barber shop fittings, kitchen equipment, bowling alleys, lighting fixtures, all furniture, rugs, etc., and two 300 horse-power boilers.

THE ELKS' CLUB HOUSE, BROOKLYN, N. Y. PLATES 37–39. The Elks' Club House is located on a lot 100 by 115 feet and occupies a space 80 feet wide by 99 feet deep, arranged on the lot to preserve the light on all sides of the building and leaving a ten-foot driveway on each side.

The architectural style adopted is transitional between Italian Gothic and Renaissance. The materials are a light yellowish gray brick similar to that used in the Madison Square Presbyterian Church in New York, designed some years ago by McKim, Mead & White. It is laid up with a wide flush joint. All ornament is executed in terra cotta, much of which is in polychrome. The cornice follows Italian precedent and is decorated in color.

The basement contains a bowling alley with lockers and general toilet, kitchen, stewards' department, serving pantry for the third floor service, bar, fan chamber, refrigerating plant, and storage space for wines and supplies.

On the first floor the most imposing apartment is the main lobby, which is floored with terrazzo. This room as well as the dining room and the lodge room have been left entirely undecorated in plain white plaster with the intention of adequately treating them at a later date. The main lodge room on the second floor is about 36 feet high, with three mezzanine floors arranged about it, which provide space for committee rooms, offices for lodge officers, etc. The club room on the third floor will be the apartment used chiefly for club gatherings and is 45 feet wide, 16 feet high, and occupies the full depth of the building.

The cost of the entire building was a small fraction over 31 cents per cubic foot.

THE PHI GAMMA DELTA FRATERNITY HOUSE, PHILADELPHIA, PA. PLATES 40–43. The architectural style of the Phi Gamma Delta Fraternity House was chosen to conform to that of the other buildings at the University of Pennsylvania with which it is connected. The walls are of red brick laid with a rough cut, one-inch mortar joint.

The building is designed to accommodate forty students, the total membership of the chapter. The sleeping quarters provide for eighteen resident members together with facilities for study. These are arranged in suites of bedroom and study to be occupied by two students each. The chapter room where the meetings of the organization are held is located on the top floor.

The cost of the building entire, not including the furniture, which was designed by the architects, but all interior finish, wainscoting, etc., was 25 cents per cubic foot.

NORWOOD HIGH SCHOOL, NORWOOD, OHIO. PLATES 44, 45. The Norwood High School was designed to amply meet the educational needs of a growing community and it is so arranged that it can readily be extended to take care of future needs by constructing another portion similar in size and shape to that already built, forming a completed building about a hollow square in the center of which would be the present auditorium wing.

A special feature is the separate gymnasia provided for boys and girls, that for the former being 44 by 62 feet and for the latter 35 by 62 feet. The swimming pool, 17 feet wide by 40 feet long, is located in the basement and varies in depth from 3½ to 7 feet. It is lined on the sides and bottom with white enameled brick. The doors leading to the pool are provided with two locks each and are keyed differently so that security is guaranteed when the pool is being used by either boys or girls. Separate locker rooms are provided on each floor instead of the usual lockers in corridors, and from these locker rooms entrance can be had to separate toilet rooms on each floor.

The cost of the building, exclusive of furnishings, was $257,000, or 16 cents per cubic foot.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

Circumstances compel us to request that subscribers do not send to us material for publication — photographs, drawings, etc. — unless arrangements have been previously made for its acceptance. During the past three months we have had enough material sent us to supply the plate forms of THE BRICKBUILDER *for at least three years. To hold this material until it can be published or to turn it back is annoying to the sender and distressing to us, hence this request. — The Editors.*

IT IS interesting to note the change that is taking place in the mental attitude of some architects towards the builder. There comes to our table frequently manifestations of this change, an instance of which we give below in the substance of a letter received recently from a well known architect. He has devoted much time to perfecting the details of office administration as well as to the preparation of plans and specifications which will obviate as far as human contrivance can the ambiguities and difficulties of interpretation which so frequently arise in these documents while in the hands of the contractor. His observations on the relation of architect to builder are of value because they are based upon actual, personal experience.

The creations of the architect are by no means his alone. However spontaneous or studied is the composition on paper, there is no future for it in the eye of the beholder, unless it is built in somewhat the spirit in which it is first imagined. That this process is so much more difficult than, for instance, the methods by which the painter gets his results, is not sufficiently realized. He, with all his troubles, can paint out and paint in again until he has got what he is after; but woe betide the architect who wishes to paint out. Steel and bricks and things, once put, must stay put. Many an architect goes about with a smile that conceals what he really thinks about his own work, which he could set right if he could only have a chance to re-arrange and try again.

The errors in building are by no means all those of the architect. The bricks were not like the sample — but there was no time to change; it was necessary to proceed with those that were on the job. The contractor placed the rafters wrong and, all things considered, could not be asked to take them off again. So the architect tore up the carefully considered full size detail and drew a new one on the smooth boards of the side of the house and now tries to pretend that the best that he could get was just what he wanted anyway.

The architect must not only foresee the finished result, but the steps by which it is to be reached, and a large part of this duty is accomplished finding the right contractor. A contract with a good contractor is unnecessary; a contract with a bad contractor is no good. The bad contractor can usually be avoided, certainly if the owner has had one experience with a man whose bid was too low and whose organization throughout was as incomplete and inaccurate as his estimating department.

The good contractor is of varying kinds. If he is just a business man and knows only whether certain methods are profitable or unprofitable, knows only how to hustle a job, the architect cannot reach his highest success. He can at best get a business result, and he cannot get that without co-operation; but there are a good many worse things than just a business result. Many owners are praying devoutly for the advent of an architect who knows enough to get a dollar's worth for a dollar and get it quickly.

One trouble is that the builder is not encouraged to make suggestions. He really knows more about the mechanics of building than many architects; but the architect resents being told. If the builders would speak out as they think, they would say in one voice that needless expenditures of money are being locked up every year in buildings to gratify whims on the part of architects. The direct, simple, natural, mechanic's, or builder's way of putting a structure together is not only just as apt, but much more apt, to be arranged in a beautiful way than a complicated, difficult, and expensive construction which many architects advance. The builder hesitates to talk to the owner about such things, and the architect ignores him.

The architect who wishes to succeed must work as closely as possible with the manufacturers of materials and the practical builder. Costs play an increasingly important part in the choice of every piece of material that goes into the building. Nothing stamps a structure more firmly as in error than an elaborate limestone first story and a galvanized iron cornice, unless it is a hospital with hundreds of thousands of dollars irrecoverably buried in architecture that ought to be drawing interest to support beds. Because the designer does not know what a thing costs, he does not know whether to use it or not. When a building costs too much, he does not know where to cut it.

Co-operation between the architect and the builder is absolutely essential to the success of the architect. The builder seldom wishes to get along without him, nor will any one of sound judgment hesitate to believe that even with many architectural draftsmen a builder cannot arrange a building as well, or make it appear as well as the architect of experience; but the owner will not pay for the architect's delays and additional and unnecessary expenses which unfortunately are becoming to be believed a procedure of many architects' offices.

The change which has started in the direction of co-operation between architect and builder cannot develop too rapidly. It is yet a new idea to the boy who has been trained to consider a pretty drawing as the end of his endeavors, that the building is the thing; or that pencils, pens, and brushes will never produce buildings that he will wish to point out to his children. Men are the tools with which he must work; and he must be eager to find the man to supply the right material, and the man to buy it and put it in place. When he finds him, he must treat him and his opinions and abilities with the respect due a fellow-worker with whom the credit of the result must be generously spared.

THE preliminary examinations for the Rotch Traveling Scholarship will be held at the office of the secretary, C. H. Blackall, 20 Beacon street, Boston, on Monday and Tuesday, April 12 and 13, 1915, at 9 A.M., to be followed by the sketch for competition in design on Saturday, April 17, at the Boston Architectural Club. The successful candidate receives $2,000 to be expended in foreign travel and study during two years. Candidates must be under thirty years of age and must have been engaged in professional work during two years in the employ of a practising architect resident in Massachusetts. Candidates are requested to register at the office of the secretary as soon before the examination as practicable.

THE BRICKBVILDER COLLECTION
EARLY AMERICAN ARCHITECTURAL DETAILS

MANTEL IN CROWNINSHIELD-DEVEREUX HOUSE, SALEM, MASS.
SAMUEL McINTIRE, ARCHITECT
BUILT IN 1805

MEASURED AND DRAWN BY
GORDON ROBB & M. A. DYER

Plate Four

(over)

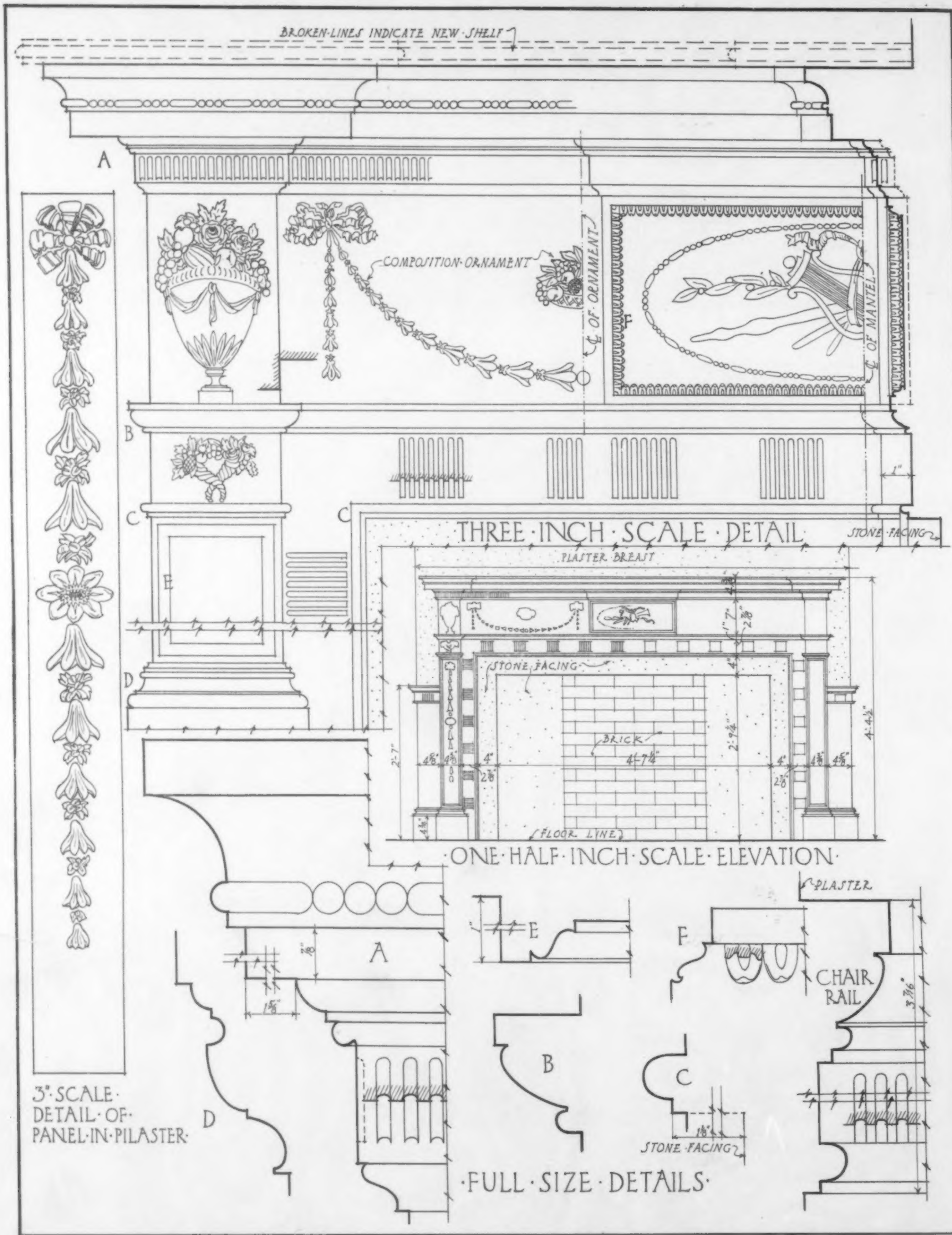


PLATE 4 APRIL -1915	MANTEL·IN·CROWNINSHIELD·DEVEREUX·HOUSE ·SAMUEL·McINTIRE·ARCHITECT· BUILT·IN·1805 SALEM·MASS·	MEASURED· & ·DRAWN·BY· ·GORDON·ROBB· ·&·M·A·DYER·

ARCHIEPISCOPAL PALACE, PLASENICIA, ESTREMADURA, SPAIN
ERECTED IN THE XVIITH CENTURY